Collaborative Case-Based Virtual Learning in Higher Education: Consultation Case in Special Education

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In this article, teacher students' views and their experiences in practicing challenging situations using an internet-based case are presented. This was done in small groups and can be described as technology-supported collaborative learning (Jeong & Hmelo-Silver, 2016) or collaborative case-based learning. The case was designed and tailor-made for teacher students in a higher education context and implemented in special teacher education at four universities: three in Finland and one in Sweden. While the content of special teacher education (STE) has similarities in these two countries (Hausstätter & Takala, 2008; Takala & Ahl, 2014), it was quite easy to implement the case in the curricula. The findings in this study have, however, the potential to contribute new knowledge about learning environments in STE that give the students opportunities to develop their critical and creative thinking and to make meaning out of their experience through collaborative case-based virtual learning (see Sharp & Sharp, 2017; Takala, Wickman, Uusitalo-Malmivaara & Lundströn, 2015).

Nowadays, the education system needs special teachers with solid knowledge, but also with transversal abilities, specifically soft skills such as excellent social interaction and communication skills, as well as skills to work together with other stakeholders—for example, on how a pupil can best be supported in an inclusive school (Hausstätter & Takala, 2008; Tracz, Beare, & Torgerson, 2018). Higher education must help students to accomplish these kinds of skills and prepare them for the school context, so they can be successful in their future professions. One problem within the special education programs in many countries is the theory-to-practice gap: that is, how to take the information received and skills learned during university education and apply them in schools. This gap, and the need to bridge it, has been brought up by the European Agency for Special Needs and

Inclusive Education (Agency, 2011), but also in our previous study (Takala et al., 2015). Another challenge in teacher education is the tendency among the students to remain within their comfort zones and in a position of being "hands" and not "heads" in the school organization (Takala et al., 2015).

Future teacher education

Teacher education has been accused of being too homogenous, unwilling to take risks or explore radical new approaches (McCall, 2017). Lectures are still a dominant form of teaching at the universities. Although lectures have potential, more innovative approaches and alternatives to lecturing are needed to improve and develop the quality of higher education (French & Kennedy, 2017). In addition to lectures, alternative ways to teach, such as experimental learning or using small groups, are used to promote student engagement and improve their learning (Hall & Ivaldi, 2016; Kramer, 2017). In higher education, a traditional lecture-based approach is the most common method of transferring knowledge to large numbers of students. However, it does little to promote the development of the special education students' skills on reflection, critical and creative thinking, or handling challenging situations in their future professions (Sharp & Sharp, 2017: Takala et al., 2015). During their studies, students should experience opportunities to gain insight into complex school situations and to practice strategies and communication skills in relation to such situations (Lasater, 2016). One alternative is to use the opportunities offered by digitalization. Nevertheless, one common complaint with digital learning is the missing face-to-face interaction. It seems that both approaches are needed, and there should be a balance between these approaches to learning (Sadowski, Pediaditis, & Townsend, 2017).

It is not easy to anticipate what kind of knowledge and skills special educators are likely to need when they complete their education, as the society is changing, and the needs of the pupils will change. The time when special educators worked in their own rooms with one individual has passed. Today they work in inclusive schools (Day & Prunty, 2015) where they are expected to

have large networks with several stakeholders (Tuomainen, Palonen, & Hakkarainen, 2010). Although STE tends to be skill-oriented, with elements of intensive practical experiences, teacher education needs to educate professionals who can act as collaboration partners and as excellent professionals with the ability to develop the educational system (De Arment, Reed, & Wetzel, 2013; Hattie, 2003). Based on the mentioned shortcomings in teacher education, a new way to study was designed. It will, of course, not solve the problems, but it might have the potential to improve the knowledge and skills special educators need in practice, in a new way. As such, it can be a small start in making changes to traditional teacher-led and lecture-based higher education (see also Riehemann & Jucks, 2017).

Special educator program and practice at school

The most common way to study to become a special educator in Finland and Sweden is to do it after a regular teaching degree. This kind of special education program is for qualified teachers—teachers who have been teaching for some years at a school or a kindergarten and want to specialize in special education. The education program lasts for one year in Finland and one and a half years, or with a slower tempo, three years in Sweden (University of Helsinki, 2017; University of Stockholm, 2017). The students are a bit older and more experienced than first-year students, who often come to the university directly from higher secondary school. Finland has special teachers and special class teachers. Special class teachers work in segregated settings, often in special schools or special classes. Special teachers work mostly in ordinary schools supporting pupils and teachers in their work. Consulting colleagues belong to the special educators' work profile. In Sweden, there are special teachers and special pedagogues. Their work profile is a bit different. Briefly described, special teachers work mainly with pupils, and special educators work more with adults and the head of the school (Göransson, Lindqvist, Klang, Magnusson, & Nilholm, 2015; Swedish Education Act, 2010; Swedish National Agency for Education, 2014). Special

pedagogues are also called special education coordinators (SENCos). In this article, we use the term *special educators* to refer to both special teachers and SENCos.

According to the law in Finland, all teachers are obliged to give support to pupils who need it (Basic Education Act, 1998; amendments of Basic Education Act, 2010). In Sweden, teachers need to modify teaching when needed to promote pupils' achievement of their goals (Swedish National Agency for Education, 2019). Primary and secondary school teachers meet pupils with special needs, but few of them have the skills or knowledge to teach these pupils (Morningstar, Shogren, Lee, & Born, 2015).

All teachers encounter challenging situations at school (Kurki, Järvelä, Mykkänen, & Määttä, 2015). These can include, for example, aggressive pupils or parents, as well as conflicts in class or on the playground. These are situations when the general education teacher often consults a special teacher or special pedagogue. With *consulting*, we mean situations where a teacher asks for help or advice from another teacher, or, in our internet-based case, from a special educator. Often it has been the psychologist who is consulted (O'Farrell & Kinsella, 2018). The special educator's role is not just that of a teacher, but also a consultant—a partner who works with pupils and consults with adults (Göransson et al., 2015). Consultation is a theme studied in Swedish special educator training more than in the Finnish context. In Sweden, it is included in the university curricula, while in Finland it is covered in less detail (Sundqvist, 2012; Takala, Nordmark & Allard, 2019; University of Umeå, 2018; University of Oulu, 2018). Consultation in the school context can be an expert-driven or a participant-driven approach. In the era of inclusion, teachers in regular education need more and more skills to deal with diverse pupils. In these situations, consulting a special educator can be helpful (Göransson et al., 2015; Sundqvist & Ström, 2015). In this article, we will study the use of a case about consultation at the universities in the two countries.

Artificial experience-building and narratives

One way to study real-life situations is artificial experience building (Takala, Winegar & Kuusela, 2009). It can be done in the form of role-play, simulation games, or, as in this article, via an internet-based case consisting of a narrative about a school. Simulation and simulation settings have been used to train leaders and soldiers (Miller, Self, Garven, & Allen, 2011), medical doctors and pilots (Dieckmann, 2009; Greene, Zurakowski, Puder, & Thompson, 2006), and many other professionals. Collaborative technology-based learning is used a great deal today—for example, in adult education (Sharp, 2017). In this article, it has been used in training teacher students in special education programs. Darling-Hammond (2006) described case methods as a viable means to prepare special education teacher students to bridge the gap between theory and practice and to develop skills of reflection, engaging them in authentic and real-life situations.

The word *artificial* is used here to mean a situation that resembles the real one but is not real. There is no connection to artificial intelligence in this context. The aim of using such learning tools is to produce both emotional and cognitive experiences. Here, our method is different from problem-based learning, which does not necessarily aim to produce emotional experiences (Ceker & Ozdamli, 2016). Distance education often means education without face-to-face contact. When losing social contact and social presence, students' motivation to study can be lower (Kumi-Yeboah, Dogbey, & Yan, 2018). However, as Herman and Mandell (2015) write in their essay, experiencing something means paying attention, and every experience is a cognitive achievement. Learning can be classified into three domains: affective, cognitive, and behavioral (see also Housley, Gaffney, & Dannels, 2015). The case used in this study includes both cognitive and affective elements, in the form of a narrative. Engagement in narrative activities has been observed to foster teachers' professional development. As Johnson and Golombek (2011) have indicated, from a Vygotskian sociocultural theoretical perspective, the transformative power of narrative lies in its ability to feed cognitive processes that foster this development. The power and flexibility of a

narrative approach was noticed when using a narrative case of selective mutism with students (Nafziger & DeKruyf, 2013).

The gap between teacher education and school reality demands the development of teacher education. This can be done by, for example, using narratives in the form of cases. As Darling-Hammond (2006) stated, when using cases, teacher candidates read "context-specific narratives about students, teaching events, or teaching and learning environments; then analyze and interpret those narratives in the light of other knowledge from research, theory, and experiences" (Darling-Hammond, 2006, p. 119). A narrative can promote thinking and combine theory and practice. To gain understanding of and to know how to act in challenging situations, an internet-based case was constructed and used in small groups of students. This kind of studying can be called *artificial experience building*.

Aims of the study

This analysis is guided by the following research questions: (a) How is the case as a form of collaborative learning experienced by students, and (b) What areas could be studied in the future through a case? The results of the two countries are also compared.

Method

A Web-based bilingual interactive case was used in Finland and in Sweden. A link to the free version is here: https://alfa2.pedag.umu.se/information/Specped/specped.html In advance, the students were informed that the case included a story of a school named Berg-school (Käviä-school in the Finnish version). In this school, two teachers will meet: a special educator and a class teacher. The class teacher has problems with a pupil, and he asks for consultation from a special educator. By making it a story of a school, we included a narrative element into it. The case consists of 11 digital "pages" with video clips and tasks. Each "page" in the case consists of video clips from the (fictitious) school, some tasks, some scientific articles or shorter scientific texts to be read, and/or

some YouTube videos to be watched. The students were told to watch the videos, read the short texts, and discuss the topics given on each "page." On some pages, they were also asked to role-play the situation. This was scheduled to happen during a two-hour session at a university course. After this lesson, other reservations were made, which could not be changed. After completing all the tasks, the students were asked to write their main reflections in a Word document together. All this was done during the two-hour session. When the whole case was completed, the students were asked to complete a feedback questionnaire about the usefulness of the case, which comprises the data used in this study.

Participants

Special education students from the University of Helsinki (N = 19), University of Oulu (N = 44), and University of Jyväskylä (N = 31) in Finland, and from the University of Umeå (N = 59) in Sweden, watched the case, did the exercises, and filled out the questionnaire. They did the tasks in groups of three to six students. The majority of the Finnish students were studying to become special teachers (Table 1), either through a one-year in-service degree (N = 51) or a five-year master's degree (n = 28). Four were studying an early special education degree, and 10 were studying a double degree (class and special teacher). The Swedish students were all studying to become SENCos.

Table 1. Finnish Students' Study Area (one response missing) ABOUT HERE

The mean age of the Finnish respondents was 32.5 years, SD 10 years, minimum 20 years, maximum 58 years. The Swedish students were a bit older: the mean age was 44.4 years, SD 6.1 years, minimum 29 years, maximum 64 years.

Instrument and data analysis

Our data include responses to the feedback questionnaire. The questionnaire included six open-ended questions and six closed questions. Two of these closed questions consisted of 16 Likert type sentences, such as "The language used was clear." These sentences were graded using a Likert-type scale (from 1= *not at all/I completely disagree* to 5 = *really a lot/ I agree completely*). In addition, the interaction in seven groups was video-recorded, but the recordings are not used in this article. The open-ended questions were analyzed using data-based content analysis. The numerical data were analyzed using statistical methods, mainly means, sum-variables, and ANOVA.

Results

The response to the research question about students' experiences of the case as a form to study is divided here into the setting and the personal learning experiences with the case.

Students' experiences of the case

The setting

While the case was watched in small groups, we asked first what is the best number of students in one group. Finnish students preferred to watch the case in groups including a maximum of four persons (N = 38); a maximum of six persons present was chosen by 34 students, and a maximum of three persons was chosen by 20 students. The Swedish students also thought the best group size would be a maximum of four persons (N = 37), followed by a maximum of three (N = 14), while only eight chose a group with a maximum of six students. The students underlined that everyone had a better opportunity to express their own opinion when the group size was no more than four persons. The Swedish students preferred a somewhat smaller group size than the Finnish students.

Learning with the case

At the beginning of the questionnaire, the students were asked to rate the case according to two issues: *the input it gave to their own learning*, and *as a method of learning* in general. They were asked to evaluate these issues on a scale of 0–5 (0 is the lowest, 5 is the highest). Both the Finnish and the Swedish students rated the case quite beneficial for their own learning, with the mean being over 3 (2.5 being a neutral choice and below that not so positive). However, the case was evaluated even more positively as a method, while rated as 3.8 and as 4 (see Table 2).

Table 2. Value (from 0 to highest 5) of the Case for One's Own Learning and as a Method ABOUT HERE

The detailed responses to the Likert-type questions (Items 5 and 6 on the questionnaire), with the grading from 1 to 5 (1 = *not at all/totally disagree* and 5 = *really a lot/totally agree*), are here compressed into four sum-variables: general opinions of the case (eight arguments, 5 a–d, h; 6 a–c); evaluation of learning (four arguments, 5 e, f, h; 6 d); evaluation of interaction (two arguments, 6 e, f), and evaluation using role-play (two arguments, 6 g, h). The case was rated quite positively overall (Table 3); in particular, interaction with other students was valued highly, with the mean being over 4 for both countries. The case as a way to learn, or as above (Table 2) as a method, was evaluated positively. Role-play was used very little. This will be discussed later.

Table 3. Evaluating the Case via Sum-Variables (scale from 1–5, with 5 being the best)
ABOUT HERE

Comparison with background variables

The Finnish students experienced the discussions with other students as very lively. When the students were grouped into three age-groups: youngest, middle category and oldest, the oldest

participants considered the discussions most lively (ANOVA, p = .005 (df = 2, F = 5.589). The youngest students saw significantly more humor in the case than the two older groups (p = .067 (df = 2, F = 2.793)). In addition, the youngest thought that the case proceeded nicely (p = .006 (df = 2, F = 5.353)) more often than the older ones.

In the Swedish data, the only significant difference between the three age groups was in the role-play. The oldest responded that they had tried the roles (p=.001(df=2, F= 8.199)) more than the younger groups. The youngest saw more humor in the case than the two older groups (p = .015 (df=2, F= 4.544)). No other significant differences could be detected by age among the students from these two countries.

From the open questions about the case, we analyzed four: the (a) strengths and (b) weaknesses of the case according to the students; (c) students' suggestions for future cases; and (d) the response to the request to comment with one sentence on the experience of watching the case. However, the content in the responses concerning strengths and weaknesses, as well as the evaluation of the case with one sentence, were so similar that they are reported together. The question about technical problems received few responses. The students indicated that technical problems were rare, but annoying when they occurred.

Strengths and weaknesses of the case

The most common strength according to Finnish students was the opportunity to discuss the case situations with peers. The case was considered realistic and typical; it was seen as thought-provoking, and it promoted and activated discussion. The most common strengths according to Swedish students were that the case was authentic, well-structured, logical, and mirrored a case that they could relate to in their own professional practice. Additionally, the instructions were clear, and the references to research articles and literature were relevant. Some quotes from the students included the following:

- "Authentic questions that stimulated creative discussions, relevant to all stages, from preschool to high school." (Swedish student 31)

- "Recognition factor, clear suggestions, good references to articles/literature." (Swedish student 52)

- "A clear link between theory and practice. It was a real case. There were good discussions. Good with several angles where the pupil, the teacher, or the principal's perspective was illuminated to varying degrees. This created fruitful discussion in our group." (Swedish student 45)

- "Collegial learning, difficult conversation exercise." (Swedish student 51)

- "The material was many-sided and working with the case together was instructive." (Finnish student 1)

- "The case felt realistic." (Finnish student 30)

- "It produced good discussions." (Finnish student 50)

The main weakness mentioned by students in both countries was the lack of time to do the case. This result can also be interpreted positively; the students had started a process of critical thinking on the individual and group level, which is time-consuming. Few students considered the case to be over-the-top and extreme, two students said it was naïve. However, the same students also pointed out that the case was very activating. Some students from both countries also experienced the case to be difficult, arguing that there was not only one correct answer, but rather several, depending on how the case was interpreted and what strategies the students jointly came up with through the group discussions and with the support of the literature. Responses included:

- "So much text to be read, difficult to read in a group." (Swedish student 7)

- "Some alternatives in the films were a little bit extreme." (Swedish student 21)

- "The situations were too simple." (Finnish student 66)

All in all, the case was described as "a nice way to study" (11 Finnish mentions) and "good" and "authentic" (17 Swedish mentions). Other common adjectives used were "teachable," "different," "interesting," "refreshing," and "a thought-provoking experience." A few students commented that they had noticed how action and a real kind of story make studying interesting. This narrative aspect was mentioned in several comments, indicating that the power of a narrative was noticed (see also Johnson & Golombek, 2011). Although the case was done in a school context, two students stated that it would be applicable at all levels, from preschool to high school.

Future cases

The students were asked what they perceived would be a good topic for a future case (Table 4). According to Finnish as well as Swedish students, *interaction* was raised most often as a theme, especially interaction with parents. The next most common themes in Finland were *multi-professional co-operation* and, equally, *co-teaching*. Then the new support systems' demands and aggression by pupils as a phenomenon at school were mentioned. This can be cautiously interpreted to mean that teachers need to be trained more in interaction skills as well as in learning new methods and systems.

***Table 4. Result of the Content Analysis of Finnish and Swedish Themes for Future Cases ABOUT HERE ***

The Swedish students focused on teamwork with colleagues and the skills needed in these situations. They could also be, at least partly, thematized into an interaction theme.

In addition, issues that received fewer than three isolated mentions in Finnish responses included pupils' absence, differentiation, mobbing, mental health problems, all learning difficulties,

and the changing role of a special educator. Performance dialogs and incidents from preschool were mentioned in the Swedish responses a few times.

Discussion

The present study investigated teacher students' views and their experiences in practicing challenging situations using an internet-based case. In general, the students have a positive attitude toward digitally-based learning, but according to Tuševljak, Majcen, Mervar, Stepankina, & Cater (2016) they prefer a blended model of traditional learning methods combined with digital learning. Our case can be called blended teaching/learning, while interaction was an essential part in using the case. Based on the students' response, the Berg-school case was received positively and experienced as a refreshing way to study. It was said to shed light on complex and authentic special education issues in a typical school environment. Further, it could be related to different levels, from preschool to high school; it stimulated collegial learning and promoted an understanding of complex issues from different angles. The students emphasized that the case was inspiring and brought in a new way of learning that complemented traditional teaching. The opportunity to also have face-to face interaction, such as working in small groups with the web-based material, was valued a great deal. This gave the students possibilities to practice collaboration as professionals. In the future, it is important to ask the students how they evaluate this case program in comparison with other ways of learning such as traditional lectures.

Since all the students in the Swedish data and many in the Finnish data had prior experience working at schools, they were already familiar with the education context. Usually, in lectures, the professor /lecturer is the expert and delivers information to non-experts (see Saville & Zinn, 2011). Now the teacher and students were more even. When the students were working with the consultation case, they experienced the learning situation and the group discussions as meaningful and relevant to the school context (the teacher of the course was not involved in the small groups). The subject of the case was consultation, and students experienced that they had learned about it;

this occurred somewhat more often among Finnish respondents than those from Sweden. One reason for this can be the curricula. The Swedish special education program includes issues about consultation, but the Finnish program does not (Author et al., 2019). According to the students' responses, future cases could be about issues in relation to situations where the teacher needs to interact with, for example, parents, pupils, or other stakeholders. Other areas of interest were new issues in teachers' work, such as using support models or starting to co-teach. Also, responding to peer aggression was something students needed guidance about.

This study has limitations: the respondents from Sweden were all SENCo students, while the special teacher students did not have campus days available for this case. More opportunities are needed to try out and modify the case. For future use of similar cases in higher educational contexts, more time is needed for discussions to reduce stress and to give the students opportunities for deeper critical and creative reflections on the individual and group levels. It was a surprise to us how much time the students needed to discuss the different tasks in the case. It was unfortunate that only two hours were reserved, three would have been needed. At present, the responses to questions regarding learning in general or one's own learning received similar, high values, which is a sign of the reliability of the questionnaire. This strengthens the reliability of our results. In addition, using technology-based blended learning has also been received positively elsewhere (Söderström et al., 2014). One limitation in using a case like this is the fact that preparing the case demands a lot in advance from the teacher, especially if he or she designs the product independently (see also Islam et. al, 2015; Salyers et al., 2014). In addition, it is not self-evident that colleagues will use a product created by someone else (cf. Scott, 2014). One challenge in generalizing the results is that this article focuses on only one program evaluation. However, the designers of the program were regular university teachers, who had no special technical skills. They had the subject knowledge, they were aware of students' needs and they received technical support when doing the program. This, we

hope, gives inspiration to other teachers also to design web-based education, using a combination of narrative and technical approaches.

This way to study in higher education was a trial to bridge the gap between theory and practice in special teacher education in Finland and Sweden. It was done by using current technological advancements to create complex and authentic situations. Opportunities to discuss, as well as offering possibilities for critical thinking, are emphasized in the university studies as a generic skill (Marin & de la Pava, 2017; Moeti, Mgawi, & Moalosi, 2017). The case demanded students step out of their comfort zone to practice challenging situations and reflect on the situations from different angles as future professionals in the educational arena. However, the present study indicates that the students need opportunities to develop their critical, professional thinking. Comments like "I would like to see a model discussion" (Finnish student 6) or "The videos were so clearly wrong that it was easy to see what was the right way" (Finnish student 20) illustrate the challenge they experience when there is no standard solution or a correct answer to a complex situation or problematic issue.

The idea behind the case was to provoke discussion and to inspire students to think and make decisions themselves. Narratives can be used in higher education successfully, and they seem to interest students. Learning through narratives can prepare students for unpredictable situations or power struggles in modern work life (Dowling, Fitzgerald, & Flintoff, 2015; Yu & Lee, 2018). The narrative element of meeting "real" people and getting involved in their story was appreciated by the students. While collaborating on this case by discussing and reading scientific material, students could reflect on important elements of their profession with each other and, afterward, with the lecturer as well. The case allowed students to meet the complex challenges of consultation as well as to offer theoretical support to these challenges. Moreover, the group discussions can stimulate processes among the students, individually and collectivity. As an artificial case, it provides a safe environment to explore opportunities, to apply ideas and solutions, and to see oneself in the place of

a decision-maker. Discussions and reflections based on experiences and scientific texts are needed in university studies, not just lecturing, listening, and note-taking. New ways of teaching are welcome and appreciated by students; in one study (Gillie, Dahli, Saunders, & Gibson, 2017), students with disabilities particularly benefitted from digital learning.

One challenge when writing this article was to name the issue described. It is not e-learning (Rusman, 2016), nor m-learning (Yorganci, 2017), nor what John Dewey called *learning by doing*. Rather, it is all of these. It is also case-based learning (Saltan, 2017), as well as learning using artificial experience-building (Author et al., 2009) or learning by using simulations (Söderström, Åström, Anderson, & Bowles, 2014). And yet, is it also collaborative learning and problem-based learning (Monrad & Mølholt 2017; Zheng, Niiva, & Warschauer, 2015)? We decided to call this method "collaborative case-based virtual learning." To prepare the case used in this article took time. However, it was experienced as valuable, and it seemed to bridge the gap from the university lecture room to the school. Narratives seem to have power in higher education and in digital form as well. The story of Berg-school was well-received and needs to be continued.

To conclude, further studies are needed to determine the success of this way of collaborative learning. We argue that carefully aligned reflective activities involving critical thinking, noticing, analyzing, and taking action via virtual case-based learning (as in the case described) have the potential to link together theory and practice and to contribute to meaningful knowledge and skill development among students in higher education.

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