El compromiso académico y social a través de la investigación e innovación educativas en la Enseñanza Superior

Rosabel Roig-Vila (Ed.)
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33. Developing the synthesis capacity through the undergraduate dissertation in higher education virtual environments: An experience with Pecha Kucha*

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ABSTRACT

The linkage between the university degrees and the future professional life of the student is subject to a vivid debate, as a critical purpose of formal education is to prepare students for their development after the University. In this article, we present a pioneering experience in the end-of-studies dissertation in undergraduate degrees in Education, Psychology and Economics studies in one of the largest virtual European Universities through the use of a presentation according to Pecha Kucha method. The purpose of our research is, in the first place, to present the challenge that supposes the training of competences and evaluation of the undergraduate dissertation in virtual higher education, and secondly to investigate the adequacy of the Pecha Kucha format as a tool for the development of certain soft skills, in particular to train the synthesis capacity. According with the results of this research pilot, Pecha Kucha seems to be an appropriate approach for the end-of-studies dissertation in these environments, to practice especially the synthesis capacity, together with other soft skills, in these dissertations in open universities.

KEY WORDS: Synthesis capacity, Pecha Kucha, Final Undergraduate Dissertation, Competences

1. INTRODUCTION

Higher education institutions have sought to restructure their curricular offerings to bring them in line with current societal needs, to attract and retain students, and to help students progress toward graduation with certain skills well developed (Dunbar, Brooks & Kubicka-Miller, 2006). The linkage to the future professional life of the student is, therefore, subject to a vivid debate, as a critical purpose of formal education is to prepare students for their development after the University (Elvira et al., 2017; Kinchin, Cabot & Hay, 2008). The student also consider that the curriculum objectives should be employment-oriented and in line with their need of future employment and long-term development (Zhao, Ma & Qiao, 2017).

The degree studies should be committed to develop competences to prepare students to face the demands to be a professional, well integrated into the labour market. And the goal of the “dissertation” as final step of the degree studies should be to demonstrate that students count with enough competences to bridge the transition toward “the real world”. Nevertheless, some researchers ask whether the dissertation, with its emphasis on scientific rigor, really prepares students for this new stage, that is, whether it actually develops “industry-relevant” or “business-oriented” attributes like time management, critical thinking, and problem-solving (Sinkovics, Richardson & Lew, 2015). The

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question is how to fill the gap between the skills demanded by the employers and those developed by the universities (Milhauser & Rahschulte, 2010), and also how to develop adequate assessment methods to evaluate their acquisition (Baartman et al., 2006). In particular, how to develop the so called “soft skills” is a relevant challenge.

The guidelines of the EHEA imply also the rethinking of many of the current evaluation systems, since the new pedagogical models are now focused on the learning acquired through the students’ personal work and on the establishment of the ideal conditions for them to achieve the learning outcomes of the proposed educational objectives (Mateo et al., 2012). However, one practice has proven more resistant to change, technology enhanced or not: the supervision and guiding, and the evaluation of students’ undergraduate dissertations (Todd, Smith & Bannister, 2006; Jaldemark & Lindberg, 2013; Basturkmen, East & Bitchener, 2014). The experiences and perceptions of final-year students were investigated by Todd, Bannister, & Clegg (2004), and Greenbank & Penketh (2009). Both studies demonstrated that students value autonomy, authenticity and ownership in relation to the dissertation. However, considerable challenges, especially in relation to time management of the dissertation development, were reported as well in Todd, Bannister, and Clegg (2004). It is also challenging the indefinite nature of the informal skills/competences and the difficulty of applying them. In particular, the analysis/synthesis competence is increased with more experience (Polymeropouloum & Kameas, 2012) and the end-of-studies dissertation could be an optimal opportunity to train it.

On the other hand, there has been little research on the challenges and complexities of distance and virtual end of studies project in technology environments (Aghaee & Keller, 2016) and also postgraduate research degree programmes (Nasiri & Mafakheri, 2015; Evans and Green 1995; Andrew 2012). Technology-supported thesis supervision has previously been studied at a bachelor level from the perspective of the learners (Jaldemark & Lindberg, 2013) and from the viewpoint of the supervisors (Augustsson & Jaldemark, 2014), and its assessment in these environments is still a nascent area of research, especially in virtual higher education where providing useful feedback to large number of students can be difficult, as Crisp & Ward (2008) pointed out.

The objective of our research is to investigate the adequacy of the format Pecha Kucha for training of competences and evaluation of the undergraduate dissertation in virtual higher education environments, and in particular testing its capabilities for developing synthesis abilities. The present research is part of an Educational Innovation Project in one of the largest Open Universities in Europe, that tries to develop a transversal line common to the Faculties of Education, Psychology and Economics, to improve the orientations and realizations of the undergraduate dissertation. The research has been carried out with students of Social Education, Pedagogy, Psychology and of Business Administration and Management during the 2016-2017 academic year, inviting the students to join the innovation project that included the preparation of a Pecha Kucha presentation.

After this introduction, Sections 2 presents the design of this experience, participants and method of analysis, and in section 3 the empirical analysis results are included. This section contains the collection of data and its statistical presentation. Briefly, the results or findings are detailed and discussed in order to justify the conclusion. Finally, Section 4 contains the conclusions of the study and its implications, as well as its limitations and future avenues of research.

2. METHOD

This section details the procedures and methods used in the investigation.

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2.1. Description of context and participants

Through the development of the final undergraduate dissertation, the student must demonstrate the specific and generic competences associated with the degree. The undergraduate dissertation is viewed as the culminating learning experience of the degree studies program. For this reason, it is particularly important its design, monitoring and evaluation. Guiding students’ final undergraduate project focused on the specific and generic competences, by mean of specific guidelines and checklists, providing formative feedback, is the main driver of this research project that embraces this Pecha Kucha experience in our university’s virtual learning environment.

The present research is part of an Educational Innovation Project in one of the largest Open Universities in Europe, that tries to develop a transversal line common to the Faculties of Education, Psychology and Economics, to improve the orientations and realizations of the undergraduate dissertation. Its overall objective is to contribute to the improvement of the Guidance and Evaluation System of the subject, focusing on the analysis of the generic and specific competences that students must demonstrate through the realization of their work.

The research has been carried out with students of Social Education, Pedagogy, Psychology and of Business Administration and Management during the 2016-2017 academic year, inviting the students to join the innovation project that included the preparation of a Pecha Kucha presentation. The final number of students that answered the questionnaire to evaluate the Innovation Project was 50.

In synthesis, the guidelines for the implementation of the dissertation project included:
• Information on the structure of the student’s work.
• Weighting of the evaluation in the different phases of the end-of studies project.
• Orientations for the presentation through a mini-video (Pecha Kucha format).
• Checklists of the different deliveries for orientation, student’s self-evaluation, and feedback’ return by the academic tutor, including the presentation phase of in Pecha Kucha format.

2.2. Instruments

After describing the specific and generic competences that should be analysed, we elaborated a checklist for each of the end-of studies project so that students could meet the requirements of their delivery and make a self-evaluation. When the academic tutor receives the student work, he provides the formative feedback to the student.

The main novelty was that, finally, the student should elaborate a mini-video with Pecha Kucha format, for the evaluation several skills, mainly oral communication skills, creativity, organization and synthesis of information.

Pecha Kucha (Japanese for ‘chit chat’ or the sound of conversation) is a presentation format that originated in 2003 in Tokyo, Japan, in an event created by Mark Dytham and Astrid Klein as a venue for designers and architects to present their work in an engaging format (Anderson & Williams, 2013). The structured format is comprised of 20 slides each shown for 20 seconds for a presentation that lasts 6 minutes and 40 seconds (it is also called 20x20 format). The slides are graphic images with little to no text, which are automatically advanced.

Pecha Kucha, conceived for designing and architecture projects presentation, is beginning to appear in classrooms (Bang-Jensen, 2010; Gries & Brooke, 2010; McDonald & Derby, 2015) and to reach university instruction (Murugaiah, 2016; Klentzin, Paladino, Johnston & Devine, 2010), but its use is still very limited. The format is appropriate for a research project presentation to a general audience such as that reported in Stößlein & Kanet (2008) who describe using Pecha Kucha presen-
tations for undergraduate student’s research projects in an operations management course. Chikushi et al. (2009) suggested that it might also be used as a thesis presentation format, requiring students to provide an overview of the project allowing a lengthier question and answer defence period. Moreover, Pecha Kucha facilitates students to learn how to communicate an argument with a clearly stated thesis (Levin & Peterson, 2013).

We consider that Pecha Kucha has the potential to support the development of soft-skill, and in particular the synthesis capacity, as the presentation must be organized to capture the message of each slide in the time permitted (slides are automated), and deliver clearer messages (due to its visual nature).

2.3. Procedure

The proposed oral presentation by using a short video (actually a Pecha Kucha presentation recorded with voice) had an extra score of one point over that obtained in the written memory of the project. The presentations are made visible to the students and a forum is enabled for students to comment the presentations of their classmates.

The Teaching Team evaluated the short videos, taking into account the comments among students, according to the following criteria:

- Adaptation to 20x20 format: number of transparencies and timing
- Quality of presentation
- Adjustment and structure: the content is aligned with the memory
- Creativity
- Analysis and synthesis
- Oral communication
- Verbal expression

Technologically, various possibilities were offered to the students to record the combination of slides and voice, including open source options with free licenses. We provided the student with a tutorial with the technical indications and steps to record the presentation. The process was completed with an online survey, answered by students, to evaluate the Pecha Kucha format, its adequacy and its contribution to the acquisition of competences.

During the preparation of the Pecha Kucha dissertation, the student moved from panic to enthusiasm. Initially they had many concerns about the complexity and risk of the experience, but finally they start feeling comfortable about the preparation. Collaboration between students was excellent and fundamental for the success of the learning experience. They help each other, improved the tutorial and gave very positive feedback about the process.

3. RESULTS

During the preparation of the Pecha Kucha dissertation, the student moved from panic to enthusiasm. Initially they had many concerns about the complexity and risk of the experience, but finally they start feeling comfortable about the preparation. Collaboration between students was excellent and fundamental for the success of the learning experience. They help each other, improved the tutorial and gave very positive feedback about the process.

Beyond the positive feedback received throughout the process, the survey answered by students after the completion of the project can give us interesting insights on how this experience is perceived in the preparation and dissertation of the final undergraduate project, and how it has been able to help students acquiring the competences and obtaining the learning results expected in this subject.
The student participating in the survey were N=50. The profile of the participant is presented by gender (Figure 1) and by age (Table 1).

![Gender Pie Chart](image)

**Figure 1.** Students in the survey by gender

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Valid %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-26</td>
<td>10</td>
<td>20.00</td>
<td>23.30</td>
<td>23.30</td>
</tr>
<tr>
<td>27-31</td>
<td>5</td>
<td>10.00</td>
<td>11.60</td>
<td>34.90</td>
</tr>
<tr>
<td>32-36</td>
<td>7</td>
<td>14.00</td>
<td>16.30</td>
<td>51.20</td>
</tr>
<tr>
<td>37-41</td>
<td>6</td>
<td>12.00</td>
<td>14.00</td>
<td>65.10</td>
</tr>
<tr>
<td>42-46</td>
<td>4</td>
<td>8.00</td>
<td>9.30</td>
<td>74.40</td>
</tr>
<tr>
<td>47-51</td>
<td>9</td>
<td>18.00</td>
<td>20.90</td>
<td>95.30</td>
</tr>
<tr>
<td>52 +</td>
<td>2</td>
<td>4.00</td>
<td>4.70</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>86.00</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1.** Students in the survey by age

By gender, 17 (34 %) out the 50 students participating in the survey, were males and 33 (66 %) were females. The age mean was 36.69 years.

From the total questions in the survey, we show in Table 2 the questions related to the Pecha Kucha presentation (in the interview it is called ‘mini video’, informal term that we manage with the students to denominate the Pecha Kucha presentation). These are issues included in a Likert questionnaire (min. 1 to max. 5).

It can be observed that the students’ evaluation related to the acquisition of competences was especially highly scored (creativity, ability to synthesis and oral expression), and the demonstration of synthesis ability received the best score among all skills and with a higher minimum value.
Table 2. Survey items related to Pecha Kucha

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The guidelines for the dissertation through the mini video in Pecha Kucha format facilitated me to develop the mini video.</td>
<td>30</td>
<td>1</td>
<td>5</td>
<td>4.10</td>
<td>0.994</td>
</tr>
<tr>
<td>The development of the mini video for the end-of-studies dissertation has allowed me to develop my creativity</td>
<td>28</td>
<td>1</td>
<td>5</td>
<td>4.14</td>
<td>1.044</td>
</tr>
<tr>
<td>The elaboration of the mini video for the end-of-studies dissertation presentation has allowed me to show my capacity for synthesis</td>
<td>28</td>
<td>3</td>
<td>5</td>
<td>4.36</td>
<td>0.826</td>
</tr>
<tr>
<td>The elaboration of the mini video for the end-of-studies dissertation has allowed me to show my communicative competence of oral expression.</td>
<td>28</td>
<td>2</td>
<td>5</td>
<td>4.18</td>
<td>0.983</td>
</tr>
<tr>
<td>I consider that the elaboration of a mini video is an appropriate method for the presentation of final project.</td>
<td>34</td>
<td>1</td>
<td>5</td>
<td>3.91</td>
<td>1.111</td>
</tr>
<tr>
<td>I believe that the preparation of mini video by Pecha Kucha format should be used by students of the Distance University to present other works.</td>
<td>32</td>
<td>1</td>
<td>5</td>
<td>3.87</td>
<td>1.008</td>
</tr>
</tbody>
</table>

N valid 28 4.09

In general, most of students give a good valuation to the items related to Pecha Kucha, with a mean over 4 points (maximum of 5). A relevant item is the third item in the table, with the highest rate of 4.36, showing the power of the Pecha Kucha presentation on the synthesis competence as the number of slides and the time per slide are limited. The students also give a high score to the opportunity of showing their oral communication competences, so scarce in distance studies.

From the 50 students participating, not all made their Pecha Kucha presentation, as this task was indeed optional for some of the academic tutors involved in the project. This is why the answers gave to these specific items go between 28 and 34.

The importance of these results and the high valuation in the practice and development of competences with Pecha Kucha are especially evident when observing the generic evaluations related to the competences for the complete process of preparation of the undergraduate thesis, which includes aspects such as identify and analyze problems in the research process, search for resources, ability to evaluate and diagnostic strategies, data analyze in the research process, formulate conclusions based on the research process, communicative competence in written expression (Table 3).

In all cases, except in search of resources, the practice of competences in Pecha Kucha received a higher valuation. With the sole exception of the search for resources, students recognized the ‘mini video’ as the best tool to acquire or practice the corresponding skills compared to the usual process.

On the contrary, the discordant note is introduced by the students’ evaluation of the appropriateness of the Pecha Kucha format for the oral presentation of the final undergraduate dissertation (and to present other works in the university): it is a positive evaluation but presents a lower score than the obtained ones for the competences. That is, the students value more Pecha Kucha as a method of practicing competences than as a formal process of official presentation. This can be a result of the pilot character of the exercise, optional and without the characteristics of a classical dissertation with the associated solemnity that implies (academic court, questions, etc.).
Table 3. Survey items about competences in the whole dissertation process

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The preparation of the end-of-studies dissertation has contributed to developing my competence to identify and analyse problems in the research process.</td>
<td>50</td>
<td>1</td>
<td>5</td>
<td>4.08</td>
<td>0.986</td>
</tr>
<tr>
<td>My competence to search for resources has been optimized with the elaboration of the end-of-studies dissertation</td>
<td>50</td>
<td>2</td>
<td>5</td>
<td>4.26</td>
<td>0.803</td>
</tr>
<tr>
<td>The preparation of the end-of-studies dissertation has contributed to developing my ability to evaluate and diagnostic strategies.</td>
<td>50</td>
<td>1</td>
<td>5</td>
<td>3.96</td>
<td>1.009</td>
</tr>
<tr>
<td>The preparation of the end-of-studies dissertation has contributed to developing my ability to data analyse obtained in the research process.</td>
<td>50</td>
<td>1</td>
<td>5</td>
<td>3.96</td>
<td>0.947</td>
</tr>
<tr>
<td>The development of the end-of-studies dissertation has optimized my competence to formulate critically grounded conclusions in the research process.</td>
<td>50</td>
<td>2</td>
<td>5</td>
<td>4.08</td>
<td>0.899</td>
</tr>
<tr>
<td>The elaboration of the end-of-studies dissertation has allowed me to show my communicative competence of written expression.</td>
<td>50</td>
<td>3</td>
<td>5</td>
<td>4.16</td>
<td>0.738</td>
</tr>
</tbody>
</table>

N valid                                                                                                                         50  

About the items asking on the contribution of the dissertation to develop generic competences is very interesting the students’ valuation of the opportunity that this project supposes for the development of ‘My competence to search for resources has been optimized with the elaboration of the end-of-studies dissertation’ with 4.26 points over a maximum of five.

Pecha Kucha has also disadvantages: Klentzin et al. (2010) indicate that the speed of a timed presentation makes it impossible for nuanced explanation of many complex concepts, but this study also provides evidence that students understanding of communicated content in Pecha Kucha presentations is statistically equivalent to that of a longer traditional PowerPoint lecture, and that Pecha Kucha can be an effective instructional technique in the university classroom. In addition to improving student speaking skills, students’ projects presentation by Pecha Kucha format fits well with the goal of develop students’ ability to communicate effectively in a variety of formats (Halonen et al., 2002).

4. DISCUSSION AND CONCLUSIONS

The final undergraduate dissertation is very well perceived by students as an opportunity to develop competences as defined in Tuning Project (González & Wagenaar, 2003) that included in the following categories:

- Instrumental competences: cognitive and methodological abilities as well as technological and linguistic skills.
- Interpersonal competences: individual abilities (the ability to express one’s feelings, critical skills, and self-criticism) and social skills related to the ability to work in teams or the expression of social or ethical commitment.
- Systemic competences: abilities and skills related to a system as a whole.

The end-of-studies dissertation in higher education virtual environments raises considerable difficulties due to the high number of students that compose each course. This is an additional challenge on top of the students’ main difficulties in this type of dissertations: exposing clearly the main lines
of the research, that is, focusing and defining the key concepts; and, on the other hand, developing the presentation in a given time, delving into the basic terms.

From the informal student’s feedback of this experience it is observed that Pecha Kucha can be an effective training technique in the university education: we consider that students’ learning about Pecha Kucha fits well with the goal of developing students’ ability to effectively communicate in a variety of formats (Halonen et al., 2002) and allows to acquire and practice skills that a mere written exercise does not allow. Practicing is a key strategy to reduce apprehension and improve the communication results (Bower et al., 2011; Dunbar et al., 2006).

The results on the students’ survey answers demonstrate that this experience is perceived as a very valuable instrument for practicing / developing different competences such as creativity, oral skills or synthesis capacity. An especially relevant finding is the value given by students to the practicing of the synthesis capacity when using Pecha Kucha: this is a genuine result from this research and a new contribution to Pecha Kucha literature.

The research has limitations and should be improved in the coming years: we need to formalize the exercise and include a more procedural process (in the evaluation, involve an academic court, promote formalized chats as vehicle for questions etc.) to reach the quality required in an official university assessment system. Nevertheless, their feedback is positive.

It is necessary to mention that the Pecha Kucha format also has some disadvantages: we observe that the speed of a timed Pecha Kucha presentation makes the nuanced explanation of many complex concepts impossible. In spite of this, Pecha Kucha seems to be an excellent approach for the end-of-studies dissertation in virtual learning environments and for practicing the soft skills in the thesis dissertations in the virtual higher education, given that the development of this competence presents considerable difficulties, due to the high number of students, the limited number of activities that develop the oral expression along the degree, the difficulties inherent to the virtual environments and the reluctance of some students to participate because of their shyness or insecurity when presenting oral works.

It is remarkable the students’ satisfaction with the systematic and rational orientation of the undergraduate dissertation, based in detailed checklists to generate motivation and self-reflexion on the own learning progress. Together with the opportunity to present their final project in one creative mini video, Pecha Kucha format, and with teachers’ guidelines and formative feedback, in a collaborative virtual learning environment.

Finally, from the students and academic tutors’ point of view, the dissertation represents a great opportunity to demonstrate the competences associated to the title, all of them clearly related to the lifelong learning competences to prepare students to be able to perform based on learning outcomes and competences: to be able to identify their own training needs in their study field and labour and professional environments, and to manage their learning highly autonomously in every context, well or poorly structured (QFEHEA, 2009), which should prepare students for a successfully integration in society and in the labour market.

5. REFERENCES


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