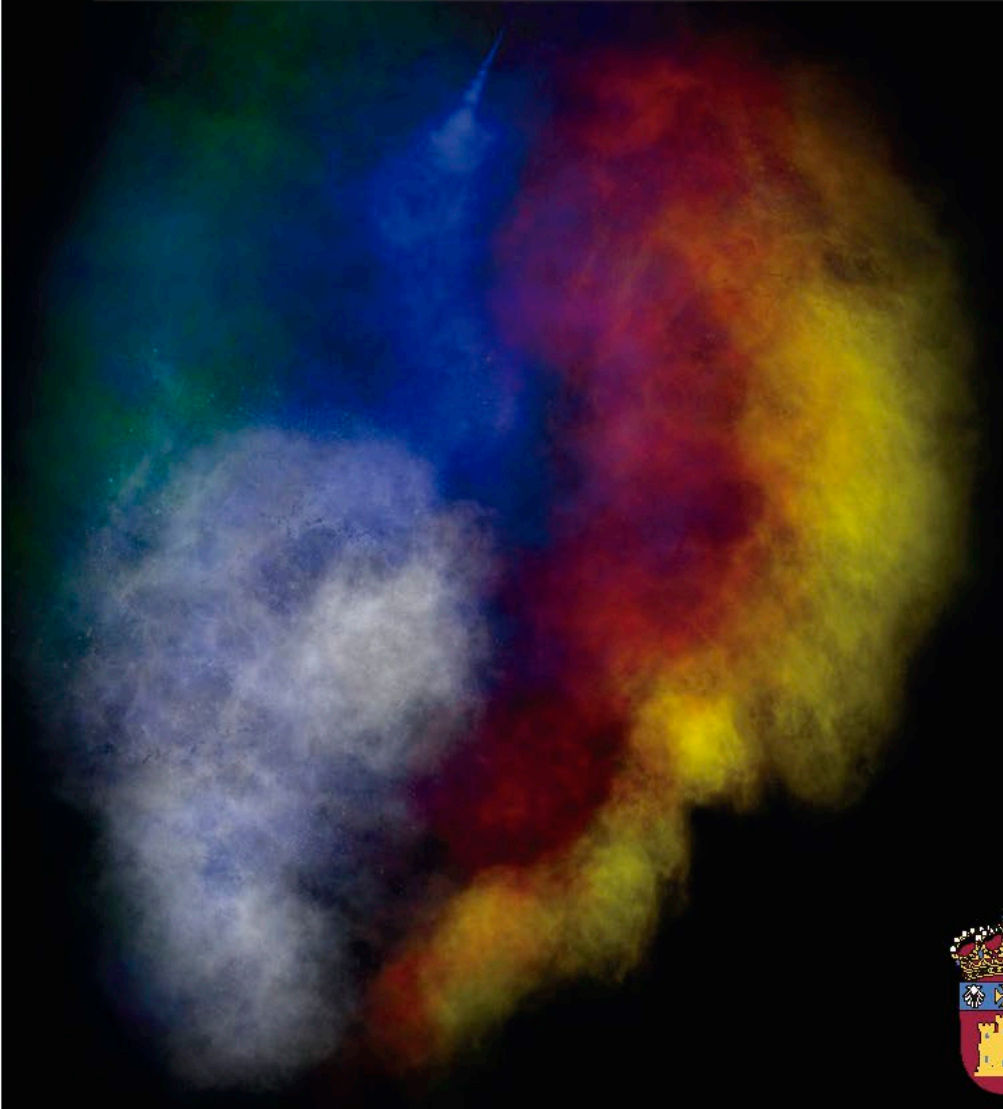
BOOK COORDINATORS:
DR. ANA MARÍA LARA PALMA
DR. RAFAEL BROTÓNS CANO

INTERNATIONAL EDUCATION NARRATIVES

Transdisciplinary Educative Innovation Experiences based on Bilingual Teaching



UNIVERSIDAD DE BURGOS

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Transdisciplinary educative innovation experiences based on bilingual teaching

UNIVERSIDAD DE BURGOS

2022

Esta obra está formada por los trabajos científicos pertenecientes al Proyecto de innovación *"Inter-disciplinary Lectures. A Possitive Rebound for English Teaching"* de la convocatoria de ayudas a grupos de innovación docente reconocidos para la elaboración de materiales docentes para los años 2021 y 2022 (resolución de 23 de febrero de 2021 del Vicerrectorado de Personal Docente e Investigador de la Universidad de Burgos).

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ACKNOWLEDGEMENTS

When this book was conceived, the first image that came to our mind was the large group of colleagues that, over the years and due to totally different circumstances, we have had the chance to meet.

Some came to us and others welcomed us. But all of them, without exception, opened their doors to collaborate academically and professionally in a generous and responsible manner.

A wide range of disciplines, different nationalities, exciting cultures…. Every minute shared to arrange mobility stays, papers for congresses, doctoral thesis supervisions, collaboration agreements, conferences and seminars... has been a fruitful time. But there were other moments we shared aside of work. We do not forget those moments and experiences neither. This has led to establish great and lasting friendships.

Thanks to each one of you. To each one for having contributed to our professional careers and, better yet, to enriching our personal lives.

It is a pleasure and an privilege to have been able to gather you all together in this book.

Thanks to the "Vicerrector de Personal Docente e Investigador", Dr. Jose María Cámara Nebreda and IFIEUBU, for their conficende in this Project, thanks to which it has been possible to develop this publication.

Thank you very much.

PREFACE

This book encapsulates several international academic experiences carried out during two academic years (2020-2021 and 2021-2022), between faculties, companies and institutions from 6 countries (Germany, France, Japan, Portugal, Spain and USA) and 15 organizations. In total, we introduce 21 participants (academics, students and experts) from various disciplines and under the teaching innovation project entitled "Inter-lectures. A possitive rebound for English teaching" (granted in the Call for Grants for Teaching Innovation Groups and with a resolution of February 3th, 2021).

The project was settled as a contribution to enhance teaching innovation and aims to give a boost to bilingual teaching by carrying out inter-class practices/master classes. It is shaped like a multidisciplinary learning format in which disciplines such as engineering, economics or law, among others, exchange their specific competencies to establish inclusive teaching and multidisciplinary networks.

The project is part of the basic mandates and lines of action in education established in the European Higher Education Area, where more specifically the EUA[1] (European University Association) points out that "it is the responsibility of universities to ensure that studies are innovative and original, incorporate lines that favor the development of the professional career, take into account the importance of inclusion and diversity, serve for social use, have sufficient resources and provide the consequent academic support to achieve excellence".

The book "International Education Narratives" is divided into 14 chapters with individual or collective narratives that gather transdisciplinary educative innovation experiences based on bilingual teaching at Burgos University.

[1] European University Association (2007): Doctoral Programmes in Europe´s Universities: Achievements and challenges. Report prepared for European Universities and Ministers of Higher Education. European University Association Publications. 2007.

As a result, this collective work brings together the ever-present challenge of promoting meta-cognition, that is, maximizing the learning process through reflection and the exchange of knowledge.

Ana María Lara Palma

Project Director "Inter-lectures. A possitive rebound for English teaching".

RESOLUCIÓN DE 23 DE FEBRERO DE 2021 DEL VICERRECTOR DE PERSONAL DOCENTE E INVESTIGADOR DE LA UNIVERSIDAD DE BURGOS POR LA QUE SE PUBLICA LA LISTA DEFINTIVA DE AYUDAS A GRUPOS DE INNOVACIÓN DOCENTE RECONOCIDOS PARA LA ELABORACIÓN DE MATERIALES DOCENTES PARA LOS AÑOS 2021 y 2022.

Convocatoria del Proyecto: Publicada con fecha de 6 de octubre de 2020 la Convocatoria de Ayudas a Grupos de Innovación Docente reconocidos para la elaboración de Materiales Docentes para los años 2021 y 2022.

1

INTER-DISCIPLINARY LECTURES. A POSSITIVE REBOUND FOR ENGLISH TEACHING: PROJECT DESCRIPTION

The narratives that are contained within these pages are associated to the project "Inter-disciplinary lectures. A possitive rebound for english teaching".

The general objective of this project is to promote bilingual teaching from the perspective of transdisciplinarity. Each specific subject program seeks the use of transversal skills and other softskills like creativity and self-discipline among students in order to achieve their job aspirations and better employability.

However, the linguistic aspect of the education cannot be considered a factor of teaching innoavation on its own since Burgos University has already an English Friendly Program (set in 2014) and several Degrees /Master are tought in that language. Therefore, what makes this project unique is the way that student comming from different disciplines are embeded during 15 weeks in an English teaching environment. During this period they will be provided with several master classes, practices and will fase challenges as a team by using several soft skills and abilities.

Next subchapter exposes the Project characteristics.

1 Academic-social aspect of the project

The project has been contextualized to obtain results at the level of students, teachers and collaborating experts (institutions and/or companies):

A) For the students, the project is presented as an inclusive, diverse, proactive and disruptive learning opportunity. It promotes the use of renewed learning methodologies, closer to society demands, where the resolution of challenges that require knowledge from different disciplines is visible. Students will be challenged to apply different concepts, adapting them to the reality of the case studied and integrating themselves as experts in a multidisciplinary team. This context allows the specific competence development of the areas of applied knowledge, but especially in transversal competences.

B) For the lecturers/teachers, the project provides them the opportunity to get involved on teaching innovation activities. There are serveral benefits derived from this: they can prepare a sort of project-related teaching materials, establish cooperation networks, develop organizational skills, learn skills not specifically related to their professional field, reinforce the collaboration between faculties and,

finally, share knowledge via publications and attendance to conferences and scientific forums.

C) For associated collaborators comming from the industry and other institutions, this project represents a format that allows them to share their experiences with society, instructing students who will be in the labor market in a more practical and direct way in the near future.

D) For institutions, specifically for the Burgos University, this project constitutes a reinforcement for Degrees and Masters that includes bilingual teaching in their syllabus, providing a greater impact and social projection.

2 Academic context of the project

The labor market increasingly demands qualified profiles with a wide variety of professional skills. Needless to say, the students with a more complete academic file will have higher chances of getting the job they want. Nowadays, together with the standard base of knowledge, it is key to incorporate some other assets, like knowledge in new technologies, languages and internship experiences, along with a well-nourished set of soft skills. All these demands of the labor market urge the academic institutions a firm commitment to balance the educational load to be more aligned with the social reality. This is the target that the project pursues.

But there is still more. Teaching innovation is not outdated. It must be constantly revitalized. This project aims to boost the teams under the umbrella of initiatives such as the one described.

In line with the above, it proposes the development of applied and inclusive learning. The challenge will encourage the lecturers teams to overcome obsolete teaching habbits, while the students will share, in inter-class mode, their own skills and competencies, solving the challenge from reflection and the exchange of knowledge.

And last but not least, it is necessary to recover teaching in English in subjects with low enrollment numbers. It is expected that this project can awaken the illusion of the students and provide new motivation sources for the teachers.

This is a clear way of promoting metacognition, that is, maximizing learning.

2

DR. HEIDE FAESKORN-WOYKE & DR. ANA MARÍA LARA PALMA

Dr. Heide Faeskorn-Woyke *studied Mathematics at the Bergische Universität in Wuppertal, Germany. She worked at Nokia Kabel GmbH in Cologne as responsible for data processing, database administration, Project management, CAE and ERP systems. In 1995 she joined the Department of Computer Science of the Cologne University of Applied Science. She occupied several positions, as Director of the Computer Science Institute, Dean of the Faculty of Computer Science and Engineering, as well as member of the Senate ofthe Cologne University of Applierd Science. He has also been responsible for internationalization relations of her faculty. Her research fields are: Databases (relational & NoSQL), eLearning for Databases, Data Mining, Big Data, Data Science, e-Business and Theoretical Informatics.*

Prof. Dr. Engineer Ana María Lara Palma *is a Professor at Burgos University, Spain since 2000. She received her European PhD at Burgos University and her research, lectures and work revolve around Human Resources Management, Knowledge Management and Ethics in Business Administration. Her research has been published in prestigious journals, including IEEE Consumer Electronics Magazine, Journal of Retailing and Consumer Services and Lecture Notes in Computer Science. Regarding international mobility, point out the collaboration with universities Tec of Monterrey (Mexico), TH Köln (Germany), Meiji University, Tokyo (Japan) in the Centre for Business IE and Ruhr West University (Germany).*

Burgos University and Cologne University: A successful story of cooperation of nearly 20 years

Heide Faeskorn-Woyke[1] and Ana María Lara-Palma[2]

[1] University of Applied Sciences of Cologne, GERMANY, heide.faeskorn-woyke@th-koeln.de
[2] Burgos University, SPAIN, amlara@ubu.es

Abstract. The cooperation between these two European universities, the Technische Hochschule Köln -Campus Gummersbach- (University of Applied Science of Cologne, Germany) and the Burgos University (Spain) starts in the academic year 2004. It was the beginning of the Bologna Process and both universities had similar student courses on the Bachelor and Master level in the Computer Science and Engineering disciplines. A series of concatenated circumstances made it possible to sign a Collaboration Agreement between the two institutions. Nobody could imagine the benefits that these signed papers hid; 20 years later, the initial team is still together, it has been strengthened with new members, new projects…still alive and fruitful. 20 years mean many things, mainly, progress; it means that people opted for serious and quality work and it means that the commitment was firm, that the dedication was generous. 20 years that have served to turn a professional relationship into a more personal one. Even though the pandemic caused by COVID-19 did not stop collaborations and, all open issues continue being developed. As example of the positive rebound, there have been outgoing and incoming mobility for students and teachers; new interinstitutional agreements for PhD studies, innovative teaching projects collaboration, Erasmus+ activities, attendance events, publications in international conferences and scientific congress. In this chapter, we are describing the success story. Once upon a time, it started with the visit and email from Prof. Dr. Ana María Lara-Palma in the year 2004, with increasing opportunities and cooperation. Highlights beside the normal cooperation were the Summer School in the academic year 2009-2010 and 4 international PhD thesis over the years.

Keywords: multiculturalism, transversal learning, synergies.

1 Starting point of the cooperation

This narrative tells the story of the bond that has united the universities of Cologne and Burgos for 20 years. 20 years of intense and constant work, which has brought an innumerable list of benefits. Maintaining such a long relationship is only possible if the people want it, if the institutions want it. Therefore, this success story was born on 04.27.2004 with this letter that I allow myself to publish because it was the culprit of all the good that has come academically and personally:

A/A: Mr. Vicerrector of Academic Ordination and Faculty.

In reference to: Convocation of helps for the educational personnel's mobility and investigator that the University of Burgos finances to a foreign university.

Dear Sir:

I remit myself to you to communicate the interest that I have in participating of this opportunity that the University of Burgos offers the educational personnel and investigator.

The nexus of union of my area of knowledge and the Fachhochschule Köln University of Applied Sciences is in one of the investigation fields that are developing in both universities and that it is the Administration of Knowledge Management and of course the experiences that you have there, with its rising comparative, innovative and experimental work.

I have already been for two occasions in the Fachhochschule Köln, having the opportunity to visit the Building of Engineering, and the Rector's Building and the Central Administration, interviewing in each place with the Professor Dr. Paul Erban and with Petra Reitze, to study several proposals of collaboration among both universities. The first one in relation to the amplification of a new line of Erasmus for the professors and students in the area of industrial organization and the second to advance proposals of collaboration so much in teaching and development investigator in what refers to my particular case.

The University of Burgos offers the possibility to finance a stay in a foreign university of between 10 and 12 weeks, with the purpose of making more complete the work of those professors' investigation that they want to participate of an encounter with other centers in those that investigation activities are developed in the same fields. At the same time, the relationships among intercampus are favored in the measure that you share experiences, knowledge and human relationships among different cultures and of those that I would be proud of participating.

My academic formation was acquired in the University of Navarra studying Industrial Engineering and Organization, and the professional formation has been developed in the University of Burgos for already some years, as teacher of subjects in topics of computerized administration of the production, economy of the company, security and labor health, administration of companies and knowledge management. In turn, my investigating work is centered in the field of knowledge management (this information is completed in another enclosed file).

I am to your complete disposition, in the measure that you estimate interesting my collaboration with your group in the Fachhochschule Köln.

Respectfully

Ana María Lara Palma

Moreover, in those moments, the Dean of TH Köln, Prof. Dr. Heide Faeskorn-Woyke opens the door of her office, receives me personally and after a meeting with her team, the machinery of inter-university collaboration is set in motion. I started teaching in several Knowledge Management in the Gummersbach campus in the

subject of "Selected fields of information management". In parallel, I prepare my research work in the PhD studies and continue until 2006 where I got my European Doctorate with special mention award (I had the honor to count with Prof. Faeskorn-Woyke as thesis tribunal member in my dissertation).

And this beginning, has been serving as a basis to continue teaching in fields as diverse as Concurrent Engineering as basis for development of new products (time to market, collaborative design, simultaneity and sequencing), Knowledge Management and Human Resources (employees capacities, decision-making, climate, individual and organizational competences, employee stepping forward, ethical responsibility when innovation arises, achieving success within the competitors, teamwork delocalization and layout) and Emotional and innovative aspects in the product creation (predictably irrational, social networks, theoretical framework, analysis and techniques, models and parameters so measure the emotional and innovative tasks).

The enthusiasm for bringing both institutions closer is evident in the Summer Course that is launched for the 2008-2009 academic year. Its history is detailed in the following subchapter.

2 Summer School "Web & Information Management in A Modern Word

A special highlight was the Summer School "Web & Information Management in A Modern Word" in 2009. Four professors of Technische Hochschule Köln (Prof. Dr. Jan Karpe, Prof. Dr. Stefan Karsch , Prof. Dr. Hans-Ludwig-Stahl and Prof. Dr. Heide Faeskorn Woyke) hold the event in the Universidad of Burgos, together with about 20 students of Germany and the same number of Spanish students. Direction was shared between both universities (Dr. Ana María Lara Palma and Dr. Jan Karpe) and on the professional level we had a number of interesting lectures and a very good organization of the Burgos University (Figure 1). For all participants we had an unforgettable week in Burgos. A lot of friendships resulted and the cooperation was developed a big step. And, from the courses, even two PhD-Thesis were the result of the workshop in the end. Beside we found similarities between the Cultures: the same Architect Johannes of Cologne constructs the two cathedrals of Cologne and Burgos.

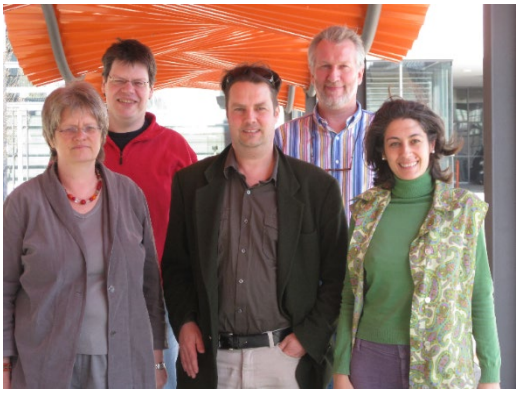

Fig. 1. Summer Course International Team (Dr. Faeskorn-Woyke, Dr. Karpe, Dr. Karsch, Dr. Stahl, Dr. Lara-Palma).

The course has been organized taking into account two broad complementary and binding fields to ensure the continuity of the business fabric in these times of crisis, such as aspects of management (part I and II) and modern technological platforms (part III and IV). The theoretical contents will assess the benefits that knowledge management brings to a firm, what the management of change in a product currently implies (change management) and what economic repercussions and new principles are emerging to recover the business system. The practical contents will be carried out on PC using new software platforms (xquery, IT security). Below is a brief description of the contents of each part and a triptych (Figure 2):

PART I: KNOWLEDGE MANAGEMENT AND CHANGE MANAGEMENT

For some time, knowledge management has become the basis of research carried out in centennial business models. It has the potential to bring about a global improvement in the firm by adding value, flexibility and competitiveness. From this perspective, the objective of this part is to show how KM models used in companies generalizes the hypothesis of organizational survival and competitiveness, so that the organization is able to identify, strengthen, and use key knowledge to reach pole position. This is the basis for change management, step with which is possible to specify the knowledge that is held but is underused in the departments, taking into account their current levels of knowledge, their relevance and the urgency to acquire new knowledge. Moreover, an analysis of the required evolution rate of the present knowledge may be included which, among other aspects helps detect new knowledge, eliminate obsolete knowledge and validate new needs.

PART II: ECONOMIC PRINCIPLES IN A MODERN WORLD

The main goal is to get an impression of what modern economics is all about. We will develop ten crucial principles about people, markets, and modern economies. The principles are about how People make Decisions, how the Modern Economy works and how the World as a whole works. Mastering these principles will help to understand how modern societies are working.

PART III: WEB 2.0 AND MODERN WEB APPLICATIONS-XML AND XQUERY DATA BASE

The goal is to know something about the history of internet, the basic technologies of INTERNET Applications like XML with XQuery and modern techniques, which are known as WEB.2.0.-Applications and Semantic Web.

PART IV: INFORMATION TECHNOLOGIES SECURITY

The goal of this part is to get a clear view on the fundamentals of Information Security (IT Security). This part are divided into two kind of lectures; the theoretical and practical ones (developed in pc). For this point, the main importance issue is to explain the student’s one examination about what IT Security is figuring out in the modern world. How organizations get their core and brilliant business taking into account the security and how they earn money just with the disintegration of the information technologies. This understanding will be supported by examples and exercises via applying the principles.

Directores del Curso:
Dª. ANA MARÍA LARA PALMA
D. JAN KARPE

Código Curso: 62K1

Área de Organización de Empresas.

Lunes, 6 de Julio

09:00 h.: ENTREGA DE DOCUMENTACIÓN

09:15 h.: PRESENTACIÓN DEL CURSO
Directores del Curso

09:30 h.: "Knowledge management"
Profesora: Dª. ANA MARÍA LARA PALMA
Profesora Titular de Ingeniería de Organización
Universidad de Burgos

11:30 h.: "Change management"
Profesora: Dª. ANA MARÍA LARA PALMA
Profesora Titular de Ingeniería de Organización
Universidad de Burgos

16:30 h.: "Economic principles in a modern world. I"
Profesor: D. JAN KARPE
Economics. Manage Director of Institut fo Distance Learning
And Further Education.
University of Appied Sciences Cologne Germany

18:00 h.: "Economic principles in a modern world. II"
Profesor: D. JAN KARPE
Economics. Manage Director of Institut fo Distance Learning
And Further Education.
University of Appied Sciences Cologne Germany

Martes, 7 de Julio

09:30 h.: Mesa Redonda: "El alcance de las plataformas web en el desarrollo de nuevos productos"
Participantes:
Profesor: D. JAN KARPE
Economics. Manage Director of Institut fo Distance Learning
And Further Education
University of Appied Sciences Cologne Germany

Profesora: Dª. HEIDE FAESKORN-WOYKE
Mathematik. Dekanen of de University of Apllied Sciences-Cologne. Germany
University of Applied Sciences-Colongne. Germany

Profesor: D. RAFAEL BROTONS CANO
Ingeniero Industrial e Ingeniero en Organización Industrial
Cd Car Project Manager. Grupo Antolín Ingeniería, SA

Profesor: D. FERNANDO TORRES RODRÍGUEZ
Ingeniero. Administrador Sistemas CAD
Grupo Antolín Ingeniera, SA

Moderadora:
Profesora: Dª. ANA MARÍA LARA PALMA
Profesora Titular de Ingeniería de Organización
Universidad de Burgos

11:30 h.: "Web 2.0 and modern web applications"
Profesora: Dª. HEIDE FAESKORN-WOYKE
Mathematik. Dekanen of de University of Apllied Sciences-Cologne. Germany
University of Applied Sciences-Colongne. Germany

16:00 h.: "XML and XQUERY data base"
Profesora: Dª. HEIDE FAESKORN-WOYKE
Mathematik. Dekanen of de University of Apllied Sciences-Cologne. Germany
University of Applied Sciences-Colongne. Germany

18:00 h.: "Information Technologies Security. I"
Profesor: D. STEFAN KARSH
Informatik Engineer. It Sicherheit
University of Applied Sciences-Colongne. Germany

Miércoles, 8 de Julio

09:00 h.: "Information Technologies Security. II"
Profesor: D. STEFAN KARSH
Informatik Engineer. It Sicherheit
University of Applied Sciences-Colongne. Germany

11:30 h.: "Information Technologies Security. III"
Profesor: D. HANS L. STAHL
Informatik Engineer. Geschäftsführender Director
University of Applied Sciences-Colongne. Germany

16:00 h.: "Information Technologies Security. IV"
Profesor: D. HANS L. STAHL
Informatik Engineer. Geschäftsführender Director
University of Applied Sciences-Colongne. Germany

18:00 h.: "Practices in information technologies security. I"
Profesor: D. JENS HAAG
Assitant Proffesor
University of Applied Sciences-Colongne. Germany

Jueves, 9 de Julio

09:00 h.: "Practices in information technologies security. II"
Profesor: D. JENS HAAG
Assitant Proffesor
University of Applied Sciences-Colongne. Germany

11:30 h.: Mesa Redonda: "Presente y futuro em la IT Security"
Participantes:
Profesor: D. STEFAN KARSH
Informatik Engineer. It Sicherheit
University of Applied Sciences-Colongne. Germany

Profesor: D. HANS L. STAHL
Informatik Engineer. Geschäftsführender Director
University of Applied Sciences-Colongne. Germany

Profesor: D. EMILIO S. CORCHADO RODRÍGUEZ
Profesor Titular de Lenguajes y Sistemas Informáticos
Universidad de Burgos

Profesor: D. ROBERTO ALCALDE DELGADO
Ingeniero Industrial e Ingenioer en Organización Industrial
Profesor Asociado Universidad de Burgos

Moderadora:
Profesora: Dª. ANA MARÍA LARA PALMA
Profesora Titular de Ingeniería de Organización
Universidad de Burgos

13:30 h.: ENTREGA DE DIPLOMAS Y CLAUSURA DEL CURSO
Directores del Curso

Nota: *El curso se impartirá en inglés y en español*

LUGAR DE CELEBRACIÓN:
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INFORMACIÓN GENERAL

Este curso será convalidable por ***3 créditos de libre elección***, para aquellos alumnos que así lo manifiesten y se sometan al proceso de evaluación que será comunicado por los Directores del curso en la presentación del mismo.

Así mismo todos los asistentes recibirán un certificado de asistencia siempre y cuando se justifique el 85% de ésta.

La Universidad se reserva la posibilidad de modificar o anular las condiciones o el desarrollo del curso hasta 48 horas antes del comienzo del mismo. La comunicación a los alumnos matriculados, en el caso de anulación, se realizará mediante correo electrónico. Para ello será imprescindible que se facilite una dirección del mismo. De no poderse facilitar, la Universidad estará eximida de responsabilidad.

Este curso ha sido aceptado inicialmente para su reconocimiento por la Dirección Provincial de Educación.

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COLOGNE UNIVERSITY OF APPLIED SCIENCES (GERMANY)
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- INSTITUT FOR DISTANCE LEARNING AND FURTHER EDUCATION

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fundación Universidad de Burgos

BURGOS2016

_La UBU es + innovadora

Cursos de Verano
UNIVERSIDAD DE BURGOS
2009

WEB & INFORMATION MANAGEMENT IN A MODERN WORLD

Directores:
Dª. Ana María Lara Palma
D. Jan Karpe

Semana del 6 al 10 de julio
BURGOS

Fig. 2. Flyer of Summer Course at UBU.

3 Student exchange program

After the summer school in Burgos in the academic year 2009-2010, about 12 exchange students from Burgos University visited the University of Applied sciences in Gummersbach, with big professional and personal advantages. Some of them stayed in Germany studying and working, other went back later. Almost every year students of both universities have visited the other university with the European Erasmus program, about 3 or 4 persons every year (a total of 150

students, teachers and staff). The advantage was to understand the culture of another country, to see what are the differences and the similarities.

4 International PhD-Cooperation and research work

Another big challenge is the cooperation for international PhD-Theses between both universities. The work of guiding the research of doctoral students has always been joint direction and co-direction. Both roles always are present in each doctoral thesis for each of the universities. So far, 4 German students enrolled at UBU and finished their PhD. Currently, there are 4 more just about to finish their PhD as well (co-directed by Prof. Dr. Heinrich Klocke, Prod. Dr. Stefan Bente and Prof. Dr. Irma Lindt). Several contributions were published in the context of the PhD-Thesis in the highest ranking of JCR (Q1 and Q2) about ethical implications, Big Data Architecture and the cultural difference between the Spanish and German studies approach. After the dissertations, the next article was published by Dr. Faeskorn-Woyke (source in Figure 3).

In the next subchapters, we introduce briefly the research work developed by our students of the international PhD Collaboration Agreements.

Fig. 3. German students PhD dissertation (19.01.16. In the picture: Dr. Arash Faroughi, Dr. Roozbeh Faroughi, Dr. Robert Giacinto). Source: https://blogs.gm.fh-koeln.de/faeskorn/2016/01/27/drei-auf-einen-streich-robert-giancinto-arash-faroughi-und-roozbeh-faroughi-schlossen-ihre-promotion-mit-dem-ph-d-in-burgosspanien-ab/.

4.1 Roozbeh Faroughi PhD: "Research about and for strategic design. Theoretical foundations and the development of a framework for the creation of new design knowledge (20.01.2016)

The thesis is sustained in a broadly developed theoretical mark of a global and unpredictably changing market, companies and organizations face increased challenges in developing successful products. A new discipline, strategic design, has been developed to meet these challenges. Strategic design aims at making an important contribution to businesses by increasing the possibility of creating

innovative solutions. Because strategic design is a young discipline, there is a lack of definitions, responsibilities, methods and models. The PhD work therefore aims to create a theoretical foundation of strategic design and to develop methods and models for its application, as well.

The theoretical foundation will be drawn by means of an analytic-synthetic method from the disciplines systems thinking, complex systems and design. By doing this, the definition, the responsibilities and the actions of strategic design will be defined. Furthermore, this work aims to create descriptive models of necessary strategic design processes, such as problem-solving, thinking, learning and knowledge creation. Based on these descriptive models, a framework of strategic design will be created in order to support designers in the creation of innovative and usable systems.

The empiric study is focused on the deduction of the hypothesis. From this approach has been possible to prove the reliability of the proposed model called SCD. After concluding both parts, the student has captured with conviction the conclusions uniting it, some personal contributions on necessary advice to favour the evolution and excellence of the sector study object.

Directors and Co-Directors: Dr. Ana María Lara Palma (Burgos University), Dr. Rafael Brotóns Cano (Burgos University) and Dr. Heinrich Klocke (Technische Hoschschule Köln, Germany).

He got International PhD and his PhD Dissertation was attented by the next tribunal members:

- Dr. Heide Faeskorn-Woyke from the TH Köln (Technische Hoschschule Köln) (Germany).
- Dr. Alfredo Jiménez Palmero from Kedge Business Scholl (France).
- Dr. Uwe Wippch from Ruhr-Universität Bochum (Germany).
- Dr. Marco Hülsmann from Bonn-Rhein-Sieg (HBRS) University of Applied Sciences (Germany).
- Dr. Mario Arias Oliva from Universitat Rovira i Virgili (Spain).

4.2 Arash Farough PhD: "On the poetry of design. Development of a renaissance and knowledge-based invention method based on the analysis of the original design" (20.01.2016)

Along the lines of the Italian composer Giuseppe Verdi, 'Let us go back to the past and it will be a step forward', this thesis will not analyze the future of design, but its past. It seeks to answer the questions why design was invented and what causes were responsible for its development. Due to the great importance of design in the Renaissance period, this thesis calls the Renaissance the 'Golden Age of Design'. Based on the scientific concepts of the Renaissance, it focuses not only on 'analysis', but also on 'synthesis'. Therefore, the thesis unifies 'Disegno', the original design theory, with the current disciplines, 'Knowledge Management', 'Software Architecture', 'Interaction Design' and 'User Experience', and searches for their similarities and conceptional connections. Finally, based on the synthesis

of Renaissance concepts, it develops its own invention method, taking into account the peculiarities of the original design and of the Renaissance period.

The research done in the first part, as framework, analyses de demands of the designers starting the study from the past, more than in the trends and future. The study goes from the primary concept of supporting innovations by creating things. The originality of the book I seeks to answer the questions why design was invented and what causes were responsible for its development. From this point, the work done is more focused on developing an invention method that takes into account the peculiarities of the original design and of the Reinaissance period. Alongside the lines of the book II, the student analyses the meaning of knowledge, the analysis about the Arti Del Disegno, The idea of beauty, the harmonious disciplines of disegno, methods and techniques of disegno, the Renaissance and Knowledge-based invention method. The empiric study is focused on proving the availability of the proposed method, Idea and Story-based invention method. It starts with the research scope, the definition of the cases, the results of SBI-method and the final statement regarding the hypothesis. After concluding both parts, the student has conclude that, both invention methods focus on two mail processes of knowledge creation: learning and invention. The originality of the study comes from the deeply review who aims to see that learning can be characterized as the process of gaining knowledge meantime invention focuses on inventing new knowledge. While the historical principles aim to create stories that helps to learn from the past, the poetical stories focuses on creating a possible future. This new way of thinking at companies can bring new possibilities in order to improve the disegno of the products.

Directors and Co-Directors: Dr. Ana María Lara Palma (Burgos University), Dr. Rafael Brotóns Cano (Burgos University) and Dr. Friedbert Jochum (TH Köln (Technische Hoschschule Köln, Germany).

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- Dr. Marco Hülsmann from Bonn-Rhein-Sieg (HBRS) University of Applied Sciences (Germany).
- Dr. Heinrich Georg Klocke from the TH Köln (Technische Hoschschule Köln) (Germany).

4.3 Robert Giacinto PhD: "Open Plexusa 3-tier collaboration and knowledge sharing architecture for virtual teams" (19.01.2016)

The goal of the thesis is to support and improve knowledge work processes in an organizational context in three important respects: Firstly, the creation of a common vocabulary that is needed for knowledge sharing and knowledge transfer. Secondly, the modelling of an ontology for contextual meta-information of knowledge artefacts in organizations and thirdly, the presentation of additional,

semantically related information of an item in a specific context. These goals are achieved with a distributed system of knowledge processing components that act proactively according to the user's activities and needs.

Furthermore, the thesis is sustained in a broadly developed theoretical mark focused on the knowledge workers and virtual technologies. A new discipline arises with a new frame for modelling knowledge using new architectures and context elicitation. The PhD work therefore aims to create a high-level idea for the use of a distributed Knowledge Management and collaboration system. The empiric study is focused on a real scenario with the conceptual overview of workers at Cisco. From this approach has been possible to prove the reliability of the proposed model called OpenPlexus. After concluding both parts, the student has captured with conviction the conclusions uniting it, some personal contributions on necessary advice to favour the evolution and excellence of the sector study object.

Director: Dr. Ana María Lara Palma (Burgos University)

He got International PhD and his PhD Dissertation was attented by the next tribunal members:

- Dr. Heide Faeskorn-Woyke from the TH Köln (Technische Hoschschule Köln) (Germany).
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- Dr. Mario Arias Oliva from Universitat Rovira i Virgili (Spain).
- Dr. Horst Stenzel from the TH Köln (Technische Hoschschule Köln). (Germany).
- Dr. Kiyoshi Murata from the Meiji University of Tokyo (Japan).

4.4 Jan Niklas Strohschein PhD: "Big data reference architecture for industry 4.0 including economic and ethical implications" (06.05.2021)

Jan Strohschein developed a Big Data Architecture as a software design blueprint using Artificial Intelligence methods and provides a set of open-source building blocks to support companies during implementation. Different use cases demonstrate the applicability of the architecture and the evaluation verifies the functionality of the architecture. Also the ethical impacts if the results are considered with respect to differences between Spain and Germany.

This thesis has studied the field and application of big data and the fields related to "machine learning" and artificial intelligence, which have become the main drivers of the economy. More specifically, it has been applied to its implementation and exploitation factor in small and medium-sized companies, in order to help innovate and distribute wealth in society more equitably. Experts in mathematics, engineering and computer science have helped the doctoral student to develop in the research of cognitive reference architecture for cyberphysical production systems. This is justified from the point of view of the need to advance in the development of new engineering products that are increasingly software-intensive. The main tasks have been the next: a) Investigation of economic and ethical implications for the introduction of big data, artificial intelligence and Industry 4.0 in companies and economies, b) Created a requirements catalog towards a

Industry 4.0 reference architecture, c) Evaluation of existing reference architectures for Industry 4.0, d) Development of a big data reference architecture to implement artificial intelligence in Industry 4.0, e) Evaluation of the new reference architecture.

Directors and Co-Directors: Dr. Joaquín Pacheco Bonrostro (Burgos University), Dr. Ana María Lara Palma (Burgos University), Dr. Heide Faeskorn-Woyke (TH Köln -Technische Hoschschule Köln, Germany).

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- Dr. Mario Arias Oliva from Universidad Complutense de Madrid.
- Dr. Baruque Zanon, Bruno from Universidad de Burgos.
- Dr. Heinrich Georg Klocke from TH KÖLN (Technische Hochschule Köln).
- Dr. Casado Yusta, Silvia from Universidad de Burgos.
- Dr. Jörg Krone from South Westphalia University of Applied Sciences.

5 Conclusion

Collecting in eleven pages the work developed in 20 academic years, with so many people and such successful results obtained is complicated. This experience alone would give for an entire book. Although, in this narrative we have simply wanted to show the importance of inter-institutional collaborations. Hope you have enjoyed reading it.

There will be a second part, the one in which we will tell what is currently taking place and the new teams that will be formed. Academic life also has its end and, my partner in this adventure, Prof. Dr. Faeskorn-Woyke has just celebrated her well-deserved retirement. An honor to have been invited and to have participated in that farewell with a few words of thanks (as if a few simple words could be enough to express what the heart harbors). Thanks Heide. Thank you for being my inspiration for my professional and personal life!

Fig. 4. Visiting a multinational Company in Burgos

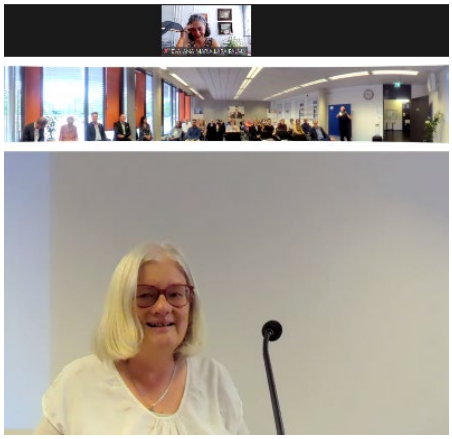

Fig. 5. Heide´s retirement cellebration

Fig. 6. Dinner with Heide Faeskorn-Woyke and Jan Karpe.

Fig. 7. Lectures in TH Köln (Germany)

Fig. 8. Preparing the Summer Course (Faeskorn-Woyke, Jan Karpe and Lara-Palma).

Fig. 9. Break. Time for a coffee.

6 Acknowledgements

Finally, we want to express our gratitude to all the people who during this long road of 20 years have been in the light and in the shadow helping and supporting the initiatives that are so enriching for both institutions: Prof. Dr. Jan Karpe, Prof. Dr. Friedrich Knittel, Prof. Dr. Lutz Köhler, Prof. Dr. Petra Reitze, Prof. Dr. Franken, Prof. Dr. Hans-Ludwig-Stahl, Prof. Dr. Friedbert Jochum, Prof. Dr. Heinrich Klocke, Prof. Dr. Stefan Karsch, Prof. Dr. Stefan Bente, Prof. Dr. Wolfgang Veit, Prof. Dr. Marion C. Schmidt, Prof. Dr. Claudia, Prof. Dr. Irma Lindt.

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3

DR. RAFAEL BROTÓNS CANO

Dr. Rafael Brotóns Cano *is an Associate Professor of Engineering at Burgos University in Spain. He works at the automotive sector since over twenty years. He held the position of full service supplier at Ford Motor Company in Cologne (Germany) for eight years and occupied the position of Grupo Antolin Engineering Manager of Japan and South Korea. Currently we has the position of Project Manager for several international new developments of vehicles in Sweden, United States, Germany and China.*

Enterprise engagement with international education experiences. A lighthouse in the university learning process

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Abstract. Increasingly, business professionals feel the commitment to collaborate with the university world. These figures are capable of approaching students and serving as a guide to live a full university life.

These kinds of collaborations act as beacons in the dark, guiding students into a world of work that is waiting for them. Through different actions, the experiences lived by the author of this paper are commented on throughout the numerous collaborations with Burgos University.

Keywords: Mentoring, Education, Labour Market.

1 Introduction

Education management has evolved, and continues to do, to more Dynamic and flexible models. While in the 20th century universities followed a 'pull model' that attracted students within more or less established structures, nowadays students are the ones who have the last word when it comes to building their educational path. In this sense, University-Enterprise communication has relaxed its importance in establishing training priorities and Student-Enterprise (or Student-Perceived Society Needs) communication has been reaffirmed as a fundamental piece of preparation towards the working Market. However, this dialogue is not always clear and students, rather than participating in a social dialogue about job demands, increasingly seem to feel like they are in a Ouija board where they want to communicate with the business world, which is so distant and diffuse. Sometimes the voices come through clearly… only in the movies.

I would like to go back to the beginning of history, to the moment when a more or less educated person decides to carry out his studies at the university. When a student considers entering the university world for the first time, it is generally when he or she is on the edge of a cliff to choose his future degree. Some (actually, the parents of some) carry the work ahead. But it is not generally the case. So the potential graduate student simply boards the sailboat of college life without a compass, sextant, or nautical chart. Hoping to come to a safe harbor, he performs the tasks entrusted to him, falling into a series of monotonous races to pass some exams that will bring him closer to a more or less fortunate destination.

In order to support college careers, some practicing professionals have taken up the baton as counselors to students anxious to take charge of their destiny. Acting as beacons or as great fireflies in the student night, these professionals turn on

lights that help guide students towards their educational destiny. Like the TV set in the movie Poltesgeist, these academically minded professionals are able to guide generations of 'Carol Anne' students towards the light. The international training experience carried out between Burgos University and the automotive components company is presented next.

Fig.1. Scene from the movie Poltergeist, directed by Tobe Hooper (1982).

2 Engagement

I remember my days as an industrial engineering student, when the future was uncertain and grades did not always match our dreams. Within the framework of the Human Resources subject, our teacher Ángel Baguer was kind enough to organize an informative session with a former student who ended up working in China. With a saturated market and without great expectations, it seemed that going abroad was a guarantee of success for a future engineer. As soon as I left the session I decided to look for a Chinese teacher and for two years I was taking weekly classes. By the time I got my degree I was more than ready to take my backpack and start eating dumplins and other Asian delicacies. China was my destiny.

During those last two years of college, I had carved out additional time not only to complete my language classes, but also to pass pending assignments and pass my final master thesis in record time. There is a popular game in the 80's called Frogger. In it, a little frog must jump over logs, turtles, and crocodiles to reach his home at the top of the screen. That session was the lever I needed to reconnect with my studies and focus my future work with a positive attitude. Thanks to it I managed to find my place in the workplace.

Fig. 2. Image from video game Frogger.

Later I started working in a company that offered me the opportunity to work in Shanghai and I strove for an international career that brought me many benefits and opportunities. I didn't get to work permanently in China, it's true, but along the way I was able to work in countries like Germany, Belgium, Poland and Japan, among others. And yes, I visited Shanghai as part of my project manager responsibility. This is how a light appeared in my university path and that is why throughout these years I have tried to help all students find their way through the complex university experience.

3 Actions

The way to help students to find their path along their studies materialize fundamentally in two lines of work. On the one hand, the most extensive, consists of participating in training experiences and organizing talks and conferences with university students. Some face-to-face and others virtual with a handful of hours apart between us. The second line of work tries to put students in contact with companies willing to incorporate Spanish students with the right motivation (and languages) into their international centers.

As I have mentioned, the main international training action consists on seminars, talks and conferences organized in different faculties of Burgos University, both with Spanish students and students of other nationalities. It's always gratifying to discourse in front of such an appreciative audience. In those moments it is possible to perceive the distance between the university and occupational worlds. Only a small proportion of students carry out internships in companies during their studies. The rest are simply acting like enthusiasts going to the movies for the first time.

Throughout these sessions the student is presented with various scenarios where they can see themselves positioned in the future. The objective is to show that the choices made during university life have a reflection in future life. At this point I always try to approach different techniques that feed the creativity of the students.

One of them is what the author Luke Hohmann (2007) defines as “Remember the future”. It consists of imagining yourself in 5 or 7 years. Then, students have to imagine a situation in which they are settled in an ideal working position. The students have to describe in detail what their position is, their work environment, their colleagues, their country of residence. Once the scenario is detailed, students are asked to describe all the actions that had to be taken from the present moment to the future in order to be able to place themselves in that situation. As if it were a real situation, they are asked "What have you done to get here?". This dynamic reveals to the student that her future is the result of the actions taken in the present.

There are other techniques that can support creative processes, such as the one described in the book Six Thinking Hats (Edward de Bono, 1986). De Bono exposes the different attitudes that can be orchestrated in a work team that faces a situation that requires a creative component to be tackled. This situation may be how to face a study process abroad, apply for international internships, apply for the Erasmus + program, etc. In short, it is about highlighting the importance of the vision of the future that, in the words of Englund, R. and Bucero, A. (2019, p143), “is a vivid description of a desired future state once a project is successful”.

The message developed during these sessions is internalized by the students in two different ways. On the one hand, from the objective and formal point of view. The student realizes that there is a gap between his current situation and his desired situation. From the moment of the session he will begin to fill in the gaps needed to reach the other side of the bridge of his education. The other way to internalize the message shared during the sessions is from an emotional point of view, almost dreamlike. The student sees the other side of the bridge…and floats towards it. In that mystical flight, almost without knowing the way, the student will find the means to achieve his goal. One way or another, it will have been possible to turn on those necessary lights to guide the student to their destination connected to the professional world.

It is not always the student who comes out enriched from these experiences. I admit that there have been times when I have been surprised by a reality that I did not know. One of them occurred in the course of an internationalization and educational exchange experience promoted by Burgos University, in collaboration with the Ochanomizu University of Tokyo. During the sessions to which I was invited to participate, led by professors Dr Ana María Lara and Dr Derek Matsuda, students from both universities were able to share their concerns and educational experiences with classmates so many kilometers away. While the majority of the Spanish students showed a certain relaxation when it came to looking for a job, the attitude of the Japanese students was totally different. From the first degree, these students begin to plan their curriculum, establishing contact with the companies or organizations where they would like to work at the end of their studies. By identifying the requirements of the companies with the curriculum, they plan it to meet the needs of the labor market from day one. Subjects, languages and hobbies are shaped for what will be the desired professional life. These students are able to turn on their own educational lights. How good it would

be for us to apply this example in other countries! Surely the Spanish students took note and were able to assimilate this teaching achieved thanks to the efforts of the above mentioned professors.

During the sessions sometimes some students share their experience as trainees in part-time companies. These examples raise the admiration of their classmates and also mine, as it helps to verify that there is still hope in the young generations. These experiences take on more relevance when they involve periods of stay abroad. Hence the importance of the second way of working, where students are enrolled into international companies. The management of these relationships is more complex, since there are many factors that must occur. But I have witnessed several cases and always satisfactorily. It is important to convey the message to the student with concerns about internationalization that beyond our comfort zone there are multiple opportunities to increase responsibility and job attributions. The attitude towards adversity of Spanish students and professionals has shown throughout history how valuable we can become, sometimes more recognized abroad than in our country of origin.

4 Conclusion

In these two ways, I have somehow been able to influence students who, in some cases, have even become part of my work teams at the company. What pleasant moments when looking at you in an almost admiring way they tell you "you don't know me but I attended a talk of yours when you were in South Korea and since then I've been curious about how to live an international experience".

It is true that there are different techniques to help and motivate students to make their way through the university world to embrace the professional life. Among all of them, the internationalization experiences stand out as the ones with the greatest impact on the formative life and affirmation of the character of the students. Such experiences prepare not only students but also individuals. It allows them to face their insecurities, their fears. And along the way they manage to absorb an experience and habits that the walls of the classroom can hardly provide. It is these profiles that are currently in demand in companies, people with the ability to work in different environments, with great communication skills and effort. These… and mathematicians, of course!

From the business world we will continue supporting these initiatives, aiming to be like a lighthouse in the university learning process.

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4

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Benefits, fears and highlights of international student experiences

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Abstract. Main target of this work is to explore the expected and unexpected benefits and fears that are experienced by students when taking an international study program and how important have these experiences been in their lives. In order to reach the objetive described, several qualitative interviews have been carried out. Six international business students from Burgos University, three incoming students and three outgoing students have participated in the study.

The most common expected benefits include meeting new people from other countries, enjoying their cultures and improving foreing languages. Relevant unexpected benefits are welcoming local people, helpful classmates, lecturer´s empathy and the opportunity to take part in plenty of interesting activities. On the concerns side the most common ones are feeling lonely, staying far away from their families and friends and being independent for their first time in a non-controlled environment with a different life style and language. Most of these fears did not come true in their international stay, being some practical issues the main difficulties they came across.

This exploratory analysis reveals a positive perception by students of their international experiences. Some of the highlights of the studying abroad program are about personnel development, like reaching a higher level of confidence or getting to know much better themselves, social and language skills, making very best friends for life. These students also refer to the impact these experiences have on their academic and professional career.

Keywords: Studying abroad programs, international students, international students' expectations and international students' fears.

2 Introduction

Studying abroad programs have become one of the most important elements in education and one strategic component of universities all over the world. Different push and pull factors determine the decisions for this international movement of students. International mobility pulls you out of your comfort zone, being away from your familiar environment, forced to speak in another language and to handle yourself in an unknown environment. These efforts have some expected and unexpected rewards in terms of development of international and social skill, highly valued in your future career, reflections on your values and beliefs, addiction to international atmospheres, better understanding of different cultures and countries, and specially getting to know yourself. If you are about to make a decision on international mobility at University, the answers by international

students on four questions about their expectations, fears and how these international experiences have modelled themselves might be of help to you.
Six international students in the field of business have been interviewed asking them these four interesting questions:

- What were your expectations, before taking part in the Erasmus/UBU global program? Were they fulfilled? Did you come across any other benefit you did not expect?
- What did you fear the most that could happen during your stay abroad? Did they really become a trouble? Did you come across others you had never thought about?
- How important has this experience been for your personal development? And for your future career?
- What are the highlights of your experience and why would you recommend an international experience to other students?

Three of the interviewed students are incoming students at Universidad de Burgos (Spain) from Mexico, Luxemburg and China and another three are outgoing students, that is, students at Universidad de Burgos who have been abroad, in USA, Denmark and Great Britain. A group of these students, three of them, have not still finished their stay when answering this questionnaire. However, the other three students have finished their stay abroad at the time of this interview, one student some months ago, another some years ago, and finally another one more than ten years ago. This variety of students, incoming and outgoing, at the end of their stay or some months or years after their stay, intends to be a representation of different students perception on their international mobility. Particularly relevant is the perception of some students who finished their stay abroad a long time ago, since their answers help us to understand the long-term impact these international experiences have.
The answers to these four questions are presented in the following section.

3 Interviews to students

3.1 First student

Home University: Universidad Autónoma de San Luis Potosí (México).

Degree: Grado en Contaduría Pública y Finanzas.

Host University: Universidad de Burgos (Spain).

Duration: One semester (2022).

What were your expectations, before taking part in the Erasmus/UBU global program? Were they fulfilled? Did you come across any other benefit you did not expect?

My expectations were completely met. Among these expectations I point out meeting new people from different parts of the world, getting to know the city and its surroundings, gastronomy, culture and living with local people. I have also made friends from Latin America and we have planned to visit our countries. One of the benefits that I did not expect is the group of young students from Burgos University who organize events for all international students (Erasmus and UBU

Global programs). They became an important support for our stay in this city, advising as on social issues that were otherwise unknown to me. Another unexpected benefit is that lecturers are able to understand how difficult it can be for a foreign student to take lessons in a country other than their own. My classmates were always kind and explained things that I did not understand, such as how to send assignments through the learning platform used at the university.

What did you fear the most that could happen during your stay abroad? Did they really become a trouble? Did you come across others you had never thought about?

What I feared the most was that it would be difficult for me to learn how to be alone. I thought it would be difficult to get used to living away from my family since I have always lived with my parents and never independently. It did not really become a problem because I was always busy with both academic and social things. Before leaving, when I was at my home university they prepared us with some lectures on how we could deal with these problems in case they came up so I certainly came with some kind of preparation about it that helped me a lot. I had never thought about the difficulty of finding an ATM (automated teller machine) to be able to withdraw money from my bank without being charged excessive commissions, as is the case with the ATM in the faculty. I also had some troubles looking for places for currency exchange. The only place I found was a bank where they charged me a 29% commission on top of having to open an account with them.

How important has this experience been for your personal development? And for your future career?

This experience has been very important since I learned to interact with people in a faster and easier way. This experience helps you to know yourself and to value everything you have in your country and abroad. From my point of view, this stage will be very important for my career because the subjects I am studying at Universidad de Burgos are explained from a global perspective.

What are the highlights of your experience and why would you recommend an international experience to other students?

Being able to interact with many people from all over the world is an advantage that not everyone from my home university will have. In the future, these friendships can be very useful when working in a globalised world.

I would recommend it to all students who have the opportunity. It is an experience far above all expectations, you learn many things that perhaps in Mexico you could not learn, as well as being able to develop social skills.

3.2 Second student

Home University: Universidad of Luxemburg.

Degree: Bachelor en Gestion.

Host University: Universidad de Burgos (Spain).

Duration: One semester (2022).

What were your expectations, before taking part in the Erasmus/UBU global program? Were they fulfilled? Did you come across any other benefit you did not expect?

Before doing the Erasmus I thought that going to a city like Burgos would be difficult for me because I would have to learn all the vocabulary and new words for what I have been studying in Luxembourg.

I thought that not having studied my degree in Spanish would make it more difficult for me. I also thought that it would be difficult to make friends since they had always told me that people from the north of Spain are more closed and it is more difficult to talk and relate with them. However, I found out that to be a legend, as I actually found locals to be extremely friendly, and I was always provided with assistance whenever I asked for help.

Other benefits that I found studying at Universidad de Burgos (UBU) was that I discovered new subjects that were very pleasant to study. Very interesting subjects that made me more interested in learning about them. The study method at UBU is very different from the one of University of Luxembourg. It is something that required me to adapt to, but little by little I got used to this new method and it is something that I deviate a lot from today to continue my studies because it made me adapt to review what we do in class every day.

The teamwork during my stay also helped me a lot to meet locals who helped me during my stay. I really like that in Spain if you study a degree you can work in different jobs since you can choose different subjects in such a way that in the end you choose your job with respect to the studies you have chosen because you liked those subjects.

What did you fear the most that could happen during your stay abroad? Did they really become a trouble? Did you come across others you had never thought about?

What scared me the most before doing my Erasmus was missing my family and friends too much. I was distressed by the fact that not being a very open person, not being able to socialize with other people, it would be difficult for me to find new friends and live unique Erasmus experiences. But when you get to a place and you don't know anyone, it's easier to relate to people who don't know anyone there either. So, I spent a lot of time with foreign students.

The stay in Burgos helped me a lot to open up to people and be more sociable. This helped me a lot since I had magnificent experiences with the new friends I made and we shared stories, cultures, etc. We met many times to make meals

and each person brought something typical of their nationality, music or words or games. It was a very enriching experience and I am very grateful for it since I was able to live it to the fullest.

How important has this experience been for your personal development? And for your future career?

Studying abroad not only helps you to live new experiences and cultures, but it can also help you when looking for a job. More and more companies are looking for students with international experience.

When you study abroad this means that you must adapt to different situations faster and seek solutions to problems from a different perspectives. In addition to studying abroad you can learn new study methods and new subjects that can help you figure out your future personal career. In my case, during my stay in the Erasmus program, I have learned to organize myself better and look for solutions, leaving my comfort zone. I have learned that when working as a team, better and more innovative solutions could be identified.

What are the highlights of your experience and why would you recommend an international experience to other students?

The best thing about studying abroad is the group of friends I made, sharing moments, traveling through beautiful areas of Spain. These are memories that you do not forget. When you make a friend in these situations, it is a friend that is with you during your stay in the Erasmus, that helps you in any situation that you may be in. For me, my experience has been wonderful, and I have taken a group of friends with me who, to this day, continue to meet and travel together. It is what I would recommend to other students the most, to enjoy the friendships you make during your stay, to enjoy the culture and everything that the country in which you find yourself can offer you.

3.3 Third student

Home University: BinHai School of Foreign Affairs of Tianjin Foreign Studies University.

Degree: The Language of Spanish.

Host University: Universidad de Burgos (Spain).

Duration: Two academic years (2018-2020).

What were your expectations, before taking part in the Erasmus/UBU global program? Were they fulfilled? Did you come across any other benefit you did not expect?

My expectations were: to improve my language skills of Spanish in the local environment; to Learn another career which I am interested in and to have sufficient resources and adequate environment for me to study. My expectations have been completely fulfilled.

First of all, in the class that I have taken, the professor and my classmate were all very patient and responsible. My first weeks were very tough, for that I barely

understand what the professor were talking about due to my level of the language. But nearly every professor intended to adjust their ways of speaking, slowing down the speed of talking or explaining one thing in different ways for me to understand easier. The classmates were very nice and they were always there if I needed any help.

Secondly, the curriculum of Burgos University offered so many choices. I have chosen my favourite career, which is Finance and Accounting. There are other options along with mine, which are all very good.

Thirdly, there are many kinds of resources to use. The professors would provide all the material that would be needed, and in the library of the university there are many kinds of academic books.

What did you fear the most that could happen during your stay abroad? Did they really become a trouble? Did you come across others you had never thought about?

What I fear the most was if I could handle myself due to the limit of my language skills and the distance between me and my family. But these did not become real troubles. Firstly, just as I mentioned in the last part, all the professors and classmates were very patient, and I could improve my language step by step. First weeks were tough. I got nervous even when I had to go to supermarkets and talk to the staff. But gradually, I could understand more and more, and then I could handle the exams and other things in my life.

The second worry did not become a problem either, thanks to my friends and my classmates. My friends and I always help each others if any of us need, and I even went to some all-night parties, which for me was a breakthrough because I had never been to one before I came to Spain. These things helped me a lot when I had to struggle and made the experience a good memory for me.

How important has this experience been for your personal development? And for your future career?

I would say that it has been very important. My goal of career is becoming a professional in the field of finance who can speak Chinese, Spanish, and English. Without the experience in Burgos, I could only do something related to translation, which is an excellent choice, but not my best choice. The curriculum in the Burgos University and all the help I got from the professors and my classmates offered me the opportunity to make my goal come true.

What are the highlights of your experience and why would you recommend an international experience to other students?

I think that the most important thing is that I could learn about a new lifestyle or a new way of thinking. "If you are raised up in one way, you will not know that there are other ways to live". It is not a question of good or bad, but a question of if it is the best way for a person. An international experience would surely open the mind and change the way of seeing the world. Of course, the study is important, but I think the highest value lies in the changes inside a person.

3.4 Fourth student

Home University Universidad de Burgos (Spain).

Degree: Double Degree in Business Administration and Law.

Host University: Via University College (Denmark). Value Chain Management.

Duration: One semester (2022).

What were your expectations, before taking part in the Erasmus/UBU global program? Were they fulfilled? Did you come across any other benefit you did not expect?

Before being part of the Erasmus program, I had mixed feelings. On the one hand, I had high expectations from the comments of friends and acquaintances. On the other hand, I had the uncertainty of the unknown and the doubt about whether I was going to have the same luck in a destination in which I had no references.

Once the program was over, I have to say that, although my Erasmus has not been at all as I imagined, I would not change anything about the experience. People usually talk about how much fun they had because of all the trips they took, all the parties they went to, and the friends they made. But for me, that was just the tip of the iceberg. Of course, there are going to be parties, even when you're tired and don't feel like it; and as for travel, you can also do cheap trips if you keep an eye out for flight deals and plan well. But, in my case, this has not been the important thing about Erasmus. I am lucky to be able to say that I have not only made good friends with whom I still keep in touch. Unfortunately we can not see each other so often, but we have formed what for me has been my Erasmus family. I did not expect the latter because, in the end, practically everyone I have met stops keeping in touch with the friends they have made over time unless they are from the same country and have more opportunities to see each other. An example to demonstrate this and one that I am happy to share is the fact that a good friend I made during my semester in Denmark is getting married this summer and, even though I have not been able to see him after finishing ERASMUS, he invited me to his wedding in his country, Lithuania.

What did you fear the most that could happen during your stay abroad? Did they become trouble? Did you come across others you had never thought about?

As a foreigner in another country with a different language, you may find some problems regarding communication. In my case, I was supposed to communicate in English. However, this is not the mother tongue in Denmark, and I was a bit afraid that people were not speaking English so I could not communicate properly or that there could be misunderstandings. In the end, almost everyone in the country was speaking in English, especially in the environment where I was working and moving, so it was not a problem at all.

On the other hand, it turned up that the language barrier was there. It may seem that if you know how to speak English, even if it is not your native language, there should be no problem understanding each other. But the truth is that when you

get to know a person better and find yourself in circumstances where you are not used to dealing with English, it is easier for each person to act according to his or her culture and language. And this is where misunderstandings can arise.

Although this could seem a bit scary, it is important to see it as the process of learning and getting to know another culture. Of course, there would be difficulties and moments where you are not comfortable. But in the end, you will laugh about this experience and even create good memories with people.

How important has this experience been for your personal development? And for your future career?

Although I cannot yet talk about how this has influenced my future career because I have not yet finished my degree, I believe and hope that it will have a positive impact. This kind of experience makes you learn to work with very diverse people from very different cultures and backgrounds, in very different situations. From my point of view, this is very valuable, and even more in such a globalized and changing world in which we find ourselves. For this reason, I hope that these experiences will be valuable in the future.

As far as my personal development is concerned, it has also had a very positive impact. At first, I thought that this could be a personal development for me in the sense that you live alone in a country where you do not know anyone and you have to deal with procedures and situations that you are not used to doing often and in a different language than the one you normally use. But to my surprise, this turned out to be the easiest thing I have ever had to face. In addition, I was lucky that my host university helped us to request the date on which you had to go to do the relevant paperwork with the administration because this is required to be done in advance and on very specific dates upon arrival in the country, naturally in a language that you do not have to control upon arrival (Danish). In the end, what has been more complicated for me has been to get used to the cultural differences in environments in which there are only locals, since I was not used. I have to say that you get very positive things out of this learning process.

What are the highlights of your experience and why would you recommend an international experience to other students?

It is difficult for me to say what the highlights of this experience have been. Firstly, because of all the experiences I have had. Secondly, because depending on who you talk to there are things that may seem interesting and others that are not so interesting. Without any doubt, the most important things for me have been all I have learned both professionally and personally and the people I have met.

Without hesitating, I would recommend it to everyone who feels prepared to be part of the Erasmus experience as the outcome you get can be very positive for everything explained above.

3.5 Fifth student

Home University Universidad de Burgos (Spain).

Degree: Double Degree in Business Administration and Law.

Host University: San José State University (USA).

Duration: One academic year (2021- 2022).

What were your expectations, before taking part in the Erasmus/UBU global program? Were they fulfilled? Did you come across any other benefit you did not expect?

Before participating in the UBU global program I did not have many expectations about what the year was going to be like. I had lived in the United States before, but I wanted to experience college life and be involved in it. My year in San Jose State definitely went passed all my expectations. I met wonderful people from all around the world that are some of my closest friends now. I lived in a diverse community where I learned about different parts and cultures of the world that I did not know before. I got involved with campus life through the Student Council of the International House and had the chance to meet many interesting people and participate in different activities.

What did you fear the most that could happen during your stay abroad? Did they really become a trouble? Did you come across others you had never thought about?

My worse fear before going to San Jose was feeling alone. I went with three other students from my home university, but we barely knew eachother. Luckily I lived at a house were everyone was in my same situation, everyone just moved there from different parts of the world and had no family or friends around. Since the first day we all started doing things together and helping each other in everything we could. Once the classes started I met more local people that showed me around the city.

Another fear that I had was not having my private space as in the US most of the rooms are shared and I had never had a roommate before. Throughout the year I had two different roommates from Germany and Switzerland. I really enjoyed going to bed at night and chatting about how our day was. They were also a form of support when you had a bad day. This also helped me to not feel alone during the first weeks.

How important has this experience been for your personal development? And for your future career?

My year abroad helped me to develop different skills that will be useful for my future career and life in general. I got the opportunity to take on a leadership role by joining the International House Student Council as the Event Advisor. With that role I got the chance to be connected with the campus community and the city in many different ways and I work with different teams to organize and plan events on campus and at the House.

What are the highlights of your experience and why would you recommend an international experience to other students?

My highlight was the whole experience from going to class every day to exploring California with my friends. Studying abroad widens your mind in different ways and helps you to see everything from many perspectives. It is something that I would recommend to everyone to do during their studies. Once your time abroad is over and you look back you always think it was worth taking the opportunity.

3.6 Sixth student

Home University Universidad de Burgos (Spain).

Degree: Long Degree in Business Administration.

Host University: Dundee University (Scotland, UK).

Duration: One academic year (2006- 2007).

What were your expectations, before taking part in the Erasmus/UBU global program? Were they fulfilled? Did you come across any other benefit you did not expect?

When you have lived all your life (to that point) in the same place, it is really hard for the mind to comprehend what an experience like an Erasmus will bring to you. I don't think I had specific expectations, because it was truly a jump to the unknown. I definitely wanted to improve my English, but the spirit to get the most out of my time at the University was probably the one that couldn't let the opportunity go without trying.

Were my expectations fulfilled? They were blown away. My English definitely got to a new level. In a few weeks my ears started to accommodate to the truly lovely Scottish accent, and I realized what the need to survive does to your communication skills.

But it went so much further than the language. It truly opened my mind to the world. I was able to experience very different ways of teaching at the courses I attended. I also spent my months there with people from all over the world, getting to know different perspectives, different backgrounds. It also put me in a position where I had to face a lot of challenges by myself, which brought a level of confidence that has allowed me to take on a lot after that experience. And it just showed me that the world is so big, and there is just so much to discover.

What did you fear the most that could happen during your stay abroad? Did they really become a trouble? Did you come across others you had never thought about?

I think even at that young age my mind had realized that, if I truly think too much about the things that could go wrong, I'd convince myself to not take on any opportunities that come with uncertainty. Of course I was nervous. I had never lived anywhere outside my hometown before. Never lived outside my parents' house before. And doing all that, for the first time, in a different country, with a different language, was quite scary. I feared not being able to understand people,

I feared not knowing how to take care of even simple things like opening a bank account. And most of all, I feared feeling alone and away from my loved ones and my comfort zone.

I was so wrong.

We don't give our brain enough credit when it comes to how much it can absorb when you immerse it in a foreign language environment. Of course it was a learning process, but the language never was an impediment to enjoy the experience.

When it comes to building a life in a foreign country, I'm glad I get to write these few lines because my dad, ever since that Erasmus year, always tells me that the adventure of figuring out the small things deserved a book. But the satisfaction of getting it resolved, by yourself, and in many cases get a great story to tell out of it, made it all worth the trouble.

And you know what made it all possible? The fact that I never felt alone. I very soon found myself surrounded by kind locals very much willing to help. And even more importantly, I found peer adventurers from all corners of the world who were going through the same struggles and made it all so much easier. To this day, I count some of them as my very best friends.

How important has this experience been for your personal development? And for your future career?

It's hard to put it into words, but basically how I've chosen to live my life is deeply connected to those nine months I got to spend in Scotland.

From a personal perspective, I think I found who I truly was through this experience. There is something about getting away for a bit from the people that has always known you and the places where you have always been, that gives you an opportunity to really understand who you are.

And a very important part of that was getting that exposure to the world. My best friend that I met during this experience was born on the other side of the world, in a very much different culture. And yet, we connected so deeply; I have learnt so much from her. That broke any border left in my mind. It made me appreciate differences in a new way and find common values in the farthest place.

I haven't been able to stay put in a one place for too long after that, because there's always a new place with new adventures and new people calling me.

From a career perspective, it made a big difference as well. We all know how important speaking other languages is in this global market place. So that definitely opened doors for me that ultimately meant a career in the United States. But it's not just the language. I wouldn't have pursued a journey like that without the confidence I started to develop during my Erasmus and the seed it put inside me to be a citizen of the world.

What are the highlights of your experience and why would you recommend an international experience to other students?

I do acknowledge that everyone has to build their own path. However, regardless of whether you decide to go straight back home after an international experience and continue the life you had before, even then, the things you'll experience during the months abroad will make you see things through a new filter. A more vivid and colourful one.

4 Results and conclusions

For sure, you all have already got the main ideas from these six international experiences. Nevertheless, I summarise them in the following three tables.

Table 1. Pre-departure expectations and concerns.

Expectations	Concerns
Meeting new people	Loneliness
Getting to know other cultures and places	Living away from your family and friends
Improving language skills	Language difficulties
Experiencing college life	Hardness of making new friends
Learning other fields of studies	Not being able to handle yourself
	Being foreign in other country with a different language and culture

Table 2. Unexpected benefits and difficulties.

Unexpected Expectations	Unexpected difficulties
Welcoming and helpful classmates. Lecturers empathy. Friendly local people	Practical aspects (finding an automoted teller machine or currency exchage)
Discovering new interesting subjects Plenty of activities with international students	Misunderstandings when comunication is among people from different countries and cultures

Table 3. Main highlights.

Making new friends: *"I count some of them as my very best friends"* The best thing about studying abroad is the group of friends I made, sharing moments, traveling through beautiful areas of Spain.
Improving social and language skills: *"I was always busy with both academic and social things" , "My English definitely got to a new level" and* "This kind of experience makes you learn to work with very diverse people from very different cultures and backgrounds, in very different situations".
Getting to know other cultures and places and also yourself: *"This helped me a lot since I had magnificent experiences with the new friends I made and we shared stories, cultures, etc."*.
Attributing value to your home country: *"This experience helps you to know yourself and to value everything you have in your country and abroad."*
Impact on your future career: "Studying abroad not only helps you to live new experiences and cultures, but it can also help you when looking for a job", "*My year abroad helped me to develop different skills that will be useful for my future career and life in general".*
Personal development: *"Having faced plenty of challenge gives you confidence to pursue your professional goals in another countries" and "Making new international friends and working with students from other cultures break any border left in your mind".*

Table 4. Summary sentences for the international experience.

It is an experience far above all expectations, you learn many things that perhaps in Mexico you could not learn, as well as being able to develop social skills.
I have learned to organize myself better and look for solutions, leaving my comfort zone. I have learned that when working as a team, better and more innovative solutions could be identified.
Of course, the study is important, but I think the highest value lies in the changes inside a person.
Although this could seem a bit scary, it is important to see it as the process of learning and getting to know another culture.
My highlight was the whole experience from going to class every day to exploring California with my friends.
Studying abroad widens your mind in different ways and helps you to see everything from many perspectives.
How to live life after is deeply connected with connected to those nine months I got to spend in Scotland.
Having faced plenty of challenge gives you confidence to pursue your professional goals in another countries.

The results are not very different from those obtained by Bell (2016). Based on information from social media and blogs before and during the stay, this author carried out a research on initial pre-departure concerns and violated expectations of students during their programmes. This author performed a literature revision on potential benefits of participating in international experiences, being them similar to those reported in this study: intercultural awareness, increased intercultural communication, long-lasting impact on students' lives, increase in self-confidence, leadership skills and problem-solving skills, fostering open-mindedness and positive impact on the early stages of career development. This study shares some other similarities with the results obtained in the aforementioned research like the lonely and isolation on the concerns side and the greater emphasis placed by students on living an 'international' lifestyle rather than integrating into the host country's culture. However, Bell (2016) found that the greatest source of pre-departure anxiety was accommodation, being this aspect only mentioned by one student in this study.

These six interviews do not show violated expectations. It is important to have in mind them when taking part in an international program. These non-accomplished expectations are:

- A lack of cultural immersion compared to original expectations
- Some problems in the new domicile like technology access and customer service
- Disappointment in not developing foreign language skill
- A different communication style with faculty than they were used to made students uncomfortable.
- Struggles with different academic systems

This exploratory analysis gives insights into the studying abroad experiences, which has been very important for the academic, professional and personal life of our students. Addressing the student concerns can play an important role in influencing their decision to study abroad (Maringe & Carter, 2007). This study contributes to the identification of some concerns but specially the positive aspects that should be maintained and improved in our international programs.

I can help finishing this study by emphasising the most used word in the interviews: "friends". The study abroad programs make an important contribution towards a desired friendly world.

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5

CARLA ALONSO ANSÓ & PABLO SANTAMARÍA ÁLVAREZ

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Project for the adaptation of a turning signal: an international experience

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Abstract. Every day more and more people suffer from physical disabilities that prevent them from carrying out some of their daily activities. To help them there are several products on the market but with such a high price that most of them cannot afford them.

For this reason, the Burgos University has developed a programmed that, thanks to the cooperation of students of occupational therapy and industrial organization engineering, helps organizations such as ORHU, to which our user belongs.

With the diagnosis, the data and the problem referred by the user, a solution is found. Finally, an adapter is studied, designed and manufactured using 3D printing to make it easier for the user to operate the car's indicator at an economical price.

This experience provides both academic knowledge and the ability to work in a group and with people from different backgrounds. And at the same time, the satisfaction of helping people who need it, because if we have learnt anything, it is that by carrying out small projects like this, we can make life easier for many people.

Keywords: Engineering, Design, Low-cost.

1 Introduction

Through the subject of work organization and human resources in collaboration with ORHU association of Burgos, we have had the opportunity to participate in a low-cost project to help people.

The project consists of the creation of a support product for a user with cerebral palsy, the product consists of an adaptation to bring the blinker closer to the left hand of the user because he is currently unable to perform this action.

This work is an excerp of the work done in a work organization and human resources course, which will be referenced at the end.

2 Description of the problem

The user is almost totally independent, and he attends school and participates in sports activities such as basketball, which is one of his personal interests.

The user has no difficulties in activities of daily living, as he even has a driver's license. His biggest problem is not being able to operate the turn signal with his left hand.

The user suffers from left hemiplegia, which is a complete or incomplete paralysis of half of the body, in this case the left half, resulting in a significant physical disability. It does not allow him to perform various types of movements such as pinch, grip or twist. He is also unable to exert the necessary force to squeeze anything with his hand or to extend his elbow and shoulder. Therefore, the act of operating the indicator cannot be performed. (Sunrisemedical,2020)

There is no fully effective treatment for this disease, but it can help to improve the quality of life of the user in several ways such as: treatment through physiotherapy, to improve body mobility; exercising strength in the affected parts of the body or, also, the use of certain support products, such as the one used in this project. (Sunrisemedical,2020)

3 Current needs

Considering the profile of the user and the case to be solved that had been proposed to us, we began by holding a team meeting in *La Estación* for a Design Thinking seminar, in which we began with the first approaches to the needs of the user using an empathy map. This resource helped us to better understand what the user was thinking, feeling, seeing, hearing, saying.

After these first approaches, we began to analyze the needs in depth and concluded with the characteristics of the support product that are in Table 1.

Table 1. Needs to be met by the product. Source: Alonso Ansó, C., Alonso Casajús, R., González Marcos, S., Kindéga, W.A., Quintanilla Rivera, C. & Santamaría Álvarez, P. (2022, p. 9).

5 FUNCTION	6 Bring the turn signal lever closer to the left hand of the user, for save driving.
7 DESING/ AESTHETICS	8 It must be a lightweight product to avoid possible breakages and it must be easy to assemble to adapt it to the car of the user.
9 EFFICIENCY	10 The product must be efficient since it must respond satisfactorily to the need of the user and must be manufactured with as few resources as possible to be a low-cost product.
11 COMFORT	12 It must be a product that has adequate ergonomics, so the user does not aggravate the problem due to the use of the adaptation and it also must be as comfortable as possible for the hand since it will be a product for continuous use.

4 Low-cost project

The main point of the project was to make the necessary adaptation using as few resources as possible and at an affordable price.

To determine which materials we could use in our project, we focused on those that were affordable, that met the needs and those that could be easily found.

With all the requirements on the table it was determined that the materials to be used are those listed in Table 2.

The two main parts will be made of polylactic acid because it is the most accessible material to manufacture parts in 3D printers, this is presented as a great advantage because in case of breakage of one of the parts only a print of a necessary part will be required and not a whole set.

The rest of the materials are the screws, washers and nuts that are perfect for our project, because they are very easy to find in a hardware store and it very common to have these in your house.

The final price amounts to 2,67 euros, a price much lower than any alternative that can be found on the Internet.

Table 2. Final product costs. Source: Alonso Ansó, C., Alonso Casajús, R., González Marcos, S., Kindéga, W.A., Quintanilla Rivera, C. & Santamaría Álvarez, P. (2022, p. 21).

13 PIECE	**14 AMOUNT**	**15 MATERIAL**	**16 PRICE/UNIT (€)**
17 Main structure of the product.	18 19 1	20 Polylactic acid (PLA)	21 22 0,585
23 Semicircular Brackets to hold the adaptation.	24 25 2	26 Polylactic acid (PLA)	27 28 0,585
29 M4 screws	30 6	31 Steel	32 0,0625
33 M4 washers	34 6	35 Steel	36 0,0108
37 M4 nuts	38 6	39 Steel	40 0,2
41 Non-slip rubber	42 1	43 Rubber	44 0,94
45 TOTAL PRICE OF THE PRODUCT		46 2,67 €	

5 Design of the product

The following considerations have been considered in the design.

First, several measures have been taken so as not to cause rubbing or bumping against the steering wheel or dashboard.

Second, the materials used are light so as not to cause the turn signal to work by itself, since if this were the case it would be signaling an undesired action causing confusion to the rest of the drivers.

Third, the main color of the part will be a light color to standing out among the dark colors of the dashboard.

The last one, maximize product life to avoid the need for spare parts.

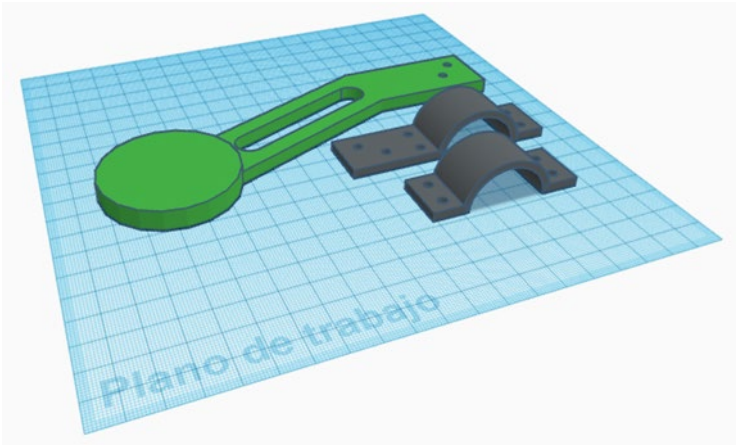

Fig. 1. Final product design in Tinkercad. Source: Alonso Ansó, C., Alonso Casajús, R., González Marcos, S., Kindéga, W.A., Quintanilla Rivera, C. & Santamaría Álvarez, P. (2022, p. 14).

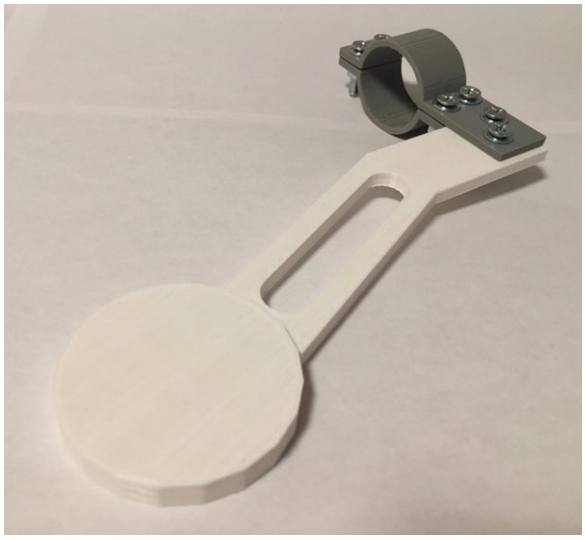

Fig. 2. Assembled final product. Source: Alonso Ansó, C., Alonso Casajús, R., González Marcos, S., Kindéga, W.A., Quintanilla Rivera, C. & Santamaría Álvarez, P. (2022, p. 28).

6 Installation and maintenance of the product

The process for the installation of the product consists of two parts.

First part consists of insert the washer into the screw thus joining part 1 on part 2 thanks to a Philips head screwdriver and finish by putting the nuts on the bottom of the screws. The anti-slip rubber is placed inside part 1.

Second part consists of joining the previous piece already assembled with the piece 3, the washers are inserted to the screws, the design is positioned on the intermittent and with the same screwdriver you join both pieces and you finish adding the nuts to the inferior part of the screws.

In case you need to uninstall it, it is only necessary to perform process 2 in reverse.

For the maintenance of the product, it does not require more than a correct use and a simple cleaning with a damp cloth on its surface.

Fig. 3. Parts of the final product. Source: Alonso Ansó, C., Alonso Casajús, R., González Marcos, S., Kindéga, W.A., Quintanilla Rivera, C. & Santamaría Álvarez, P. (2022, p. 27).

Images of the final product already mounted on the blinker and photographs of the user performing the action will be shown below.

Fig. 4. Final product mounted on the blinker. Source: Self-made (Alonso, C. & Santamaría, P., 2022).

Fig. 5. User activating the turn signal. Source: Self-made (Alonso, C. & Santamaría, P., 2022).

7 Problem solved

The adaptation made allows to eliminate the main barrier when operating the blinker, by lengthening this the user can operate it without problem with the left hand, because previously used his right hand for this action causing difficulties in driving.

Thanks to the adaptation, the user can now drive more safely, more comfortably and indirectly providing more freedom of movement by not having to rely on public transport.

8 Project experience

The experience of being able to participate in a project like this has been very satisfying because it makes you see the work and the real involvement that an engineer feels in his day to day.

Being able to help other people doing any kind of project is a very rewarding experience, because with a simple gesture you can change the life of some people giving them independence or even more freedom of movement as in our case.

In addition, thanks to the Burgos University, we have had the opportunity to work with a wide variety of people from other careers and even from other countries, giving us new experiences, memories and fostering teamwork and communication, very important aspects for the work of an engineer.

Without a doubt we would recommend this experience or similar to anyone, but especially for students, because you get to understand in a very unique way the added value you have and what you can contribute.

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6

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COVID-19 and its impact on remote collaboration, team building and training

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Abstract. Organisations were faced with major challenges during the lockdowns of the pandemic, forcing them out of their comfort zone if they wanted to be able to operate in these changed circumstances. In many cases, already established and familiar processes no longer worked due to these changed conditions, such as the absence of ad-hoc interpersonal and informal interactions on-site. Necessary new approaches to remote work included not only the introduction of the necessary digital tools, but also the development and establishment of the appropriate mindset. The accompanying changes inevitably led to friction and irritation and had to be supported by trained managers and guided by experienced coaches. With their backing, the organizations were able to translate their processes into a digital world and to identify and collaboratively implement the required changes during this complex transformation. This included social, technological, cultural, and process dimensions that were in many cases not immediately evident and only became apparent as the process unfolded. In this chapter, we review some practical challenges organizations had to face and present possible solutions that were developed during the first phase of the pandemic.

Keywords: Agile Coaching, Remote Work, Collaboration, Workshops.

The topic of digital transformation within companies has received much attention over the years and has seen increasing interest in recent times. While in 2010 only 500 articles were indexed on this topic on Google Scholar, by 2021 over 37,000 articles have been added. The pandemic and its aftermath have contributed to bringing interest in the topics of digital transformation to many areas of professional cooperation.

In addition to the issues of introducing digital tools and using them in a wide range of corporate processes, the question of virtual collaboration from different locations has also come into focus during the pandemic. All of a sudden, daily, productive collaboration was at stake as companies were concerned with introducing and integrating tools more and more recently. When the majority of knowledge workers were required to reorient themselves during lockdowns, rehearsed processes came to a halt or experienced breakdowns.

This chapter presents the experiences of practicing consultants, coaches and managers from the field of agile product development. The document outlines some challenges projects faced, and the experiments carried out during the lockdowns to improve the situation. We describe the circumstances in which knowledge workers carried out their work during the lockdown, highlighting the

challenges that many organizations faced in finding a solution. We also describe experiments that were conducted during the lockdowns in response to these challenges.

1 General challenges during the pandemic

The pandemic has revealed how far many organizations have progressed in their digitalization. Especially at the beginning of the first lockdown, creative solutions were needed to allow productive work to continue. Frequently, the tools, communication channels, and equipment necessary for the majority of knowledge workers to work from home were not available.

The adoption of such technologies is often slowed down by IT guidelines that do not allow for an individual choice of tools. This results in less than optimal solutions for the knowledge working individual.

Financial issues were another hurdle that had to be overcome, besides tool selection. The pandemic situation was perceived to be a short-term phenomenon, especially in the first year. Introducing necessary tools was met with resistance, as people didn't want to change everything for a temporary solution until they could return to normal.

The lockdowns during the pandemic presented organizations with the need to invest in keeping themselves adaptable and productive in an unfamiliar situation. As the months passed, the interim solutions became a normal part of life.

Many people have been affected by the Pandemic (Tinneveld, 2022). It has changed the way people interact with each other in their daily lives, as well as how they experience work from home situations. Individual life conditions had a major influence on the perception of remote work (Donati et al., 2021). Because of childcare responsibilities and work commitments, families with children experienced higher levels of stress than others (Oakman et al., 2022). The line between work and private life became more blurred, especially in situations when private equipment was used if the employer could not sufficiently equip its employees initially.

Many organizations are facing a crossroads where they must decide for themselves what changes will be necessary for them to remain successful. One question that will have a significant impact on this success is what the future work mode will look like. To what extent and under what conditions can remote work be supported in an organization?

The effects of the changing work modes and the shortage of skilled workers have an important influence on the future of workplace organizations. Recent surveys show (Microsoft Corporation, 2021) that employees are considering the degree of flexibility an employer can offer before starting a new employment relationship. Companies have to rethink how they cultivate leadership and collaboration to remain attractive as an employer because of the changing attitude of workers towards office-based work. Digital tools can be particularly helpful when it comes to onboarding new colleagues and building up junior staff. Their use and the

necessary process adjustments towards more hybrid work are the issues that practitioners and researchers need to address.

2 Experiments to improve informal knowledge transfer and reduce alienation during lockdowns

The lockdowns in 2020 were characterized by the fact that many within the companies had to adjust to the changed working reality. While the first lockdown was about overcoming the general hurdles of virtual collaboration and identifying the right tools, the next lockdown was about overcoming the practical and cultural challenges that came with working remotely.

Common breaks in the canteen or the coffee kitchen were history. Conversations in the hallway only took place between those who had forgotten something in the office and happened to run into each other before disappearing for the next few weeks or even months. When everyone was at home, there were very few spontaneous discussions within the team. Getting to know new colleagues was often just a brief virtual meeting before going about the usual daily work as a team.

To assess the health of a team and make it transparent to the team members, the agile coaches introduced a self-evaluation tool in a project. This Team Health Index (THI) comprised dimensions from the areas of process satisfaction, quality of work perception and perceived quality of interpersonal relationships and enjoyment of work. Once per sprint, during the retrospective, each team updated their assessment and used the findings for reflection and self-organization.

With every self-evaluation at the end of a sprint during the lockdowns, these ratings decreased even though the teams defined measures to improve their situation. As an exemplary case, this chapter looks at the two dimensions of satisfaction and quality. Fig.1 and Fig.2 show the respective ratings before the experiments had been started.

Working remotely in uncertain times during the pandemic had an obvious negative impact on the psychology of the teams.

The team of Scrum Masters and coaches discussed this issue during a workshop and developed hypotheses what kind of impulses the teams could help to regain their motivation and sense of self-actualization. Two essential hypotheses are presented here.

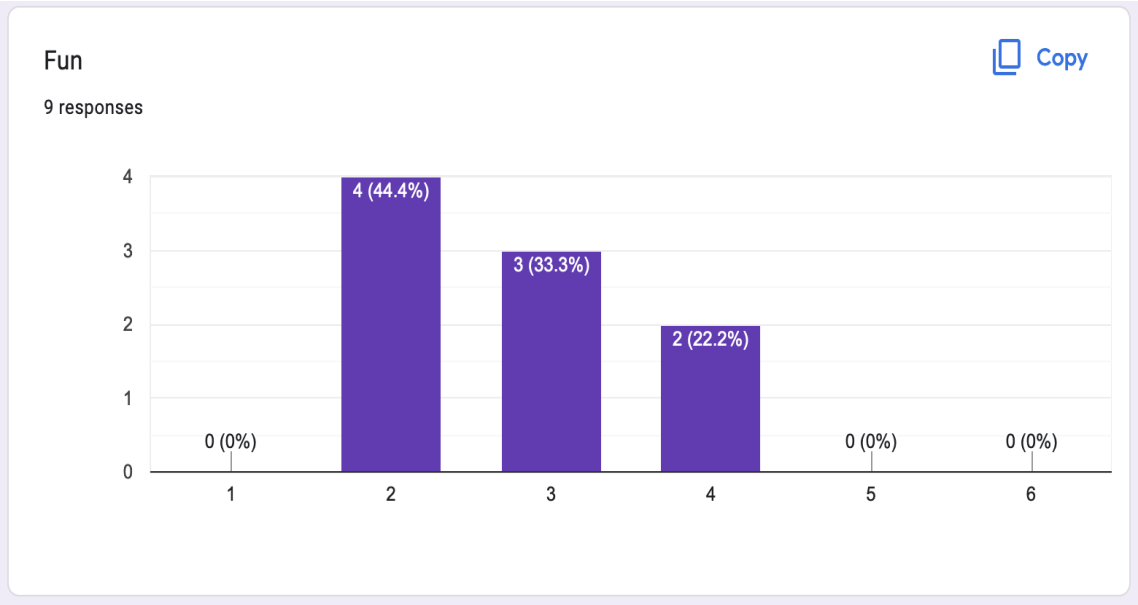

Fig. 1. Fun and work satisfaction related assessment in June 2020.

H1: *The existing organisational culture has not been prepared to allow social contacts, which significantly influence satisfaction with and enjoyment of work, to flourish over a longer period of time without physical contact. The establishment of new, virtual rituals should have a positive influence on the assessment of each individual's situation.*

H2: *There is a lack of communication channels to replace informal and casual interactions in the office. Establishing unobtrusive, informal communication channels can foster interaction between colleagues and the emergence of communities of practice, improving the perceived bond with those involved in the project.*

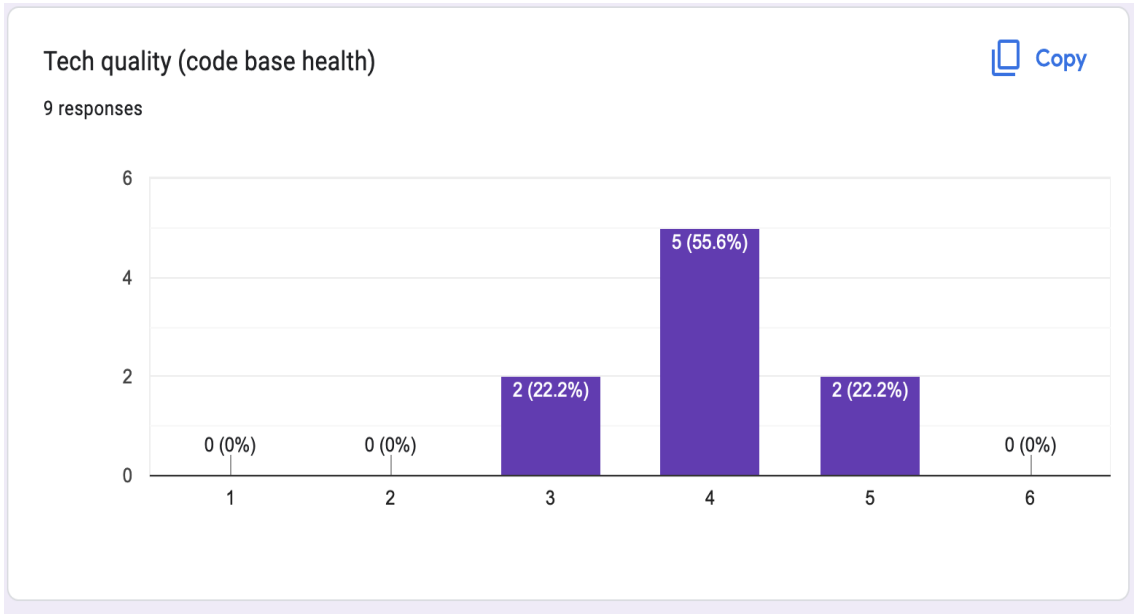

Fig. 2. Technical quality evaluation in June 2020.

2.1 Design and implementation of virtual social spaces

Hypothesis H1 focuses on the creation of opportunities and the assumption that these will be proactively pursued and shaped by the participants as soon as a personal added value is recognisable. For this purpose, the following experiments were conducted in the course of 2020:

1. Creating opportunities for casual, virtual collaboration based on digital community tools (i.e. Discord, Mastodon).
2. Introduction of a digital book club for sharing ideas and knowledge as the basis for the formation of communities of practice.
3. Building and strengthening an environment where participants feel the psychological safety to open up to their team members through a combination of retrospective exercises and optional evening activities such as game nights, movie events and collaborative challenges (virtual Escape Rooms and Murder Mysteries).

2.2 Community tools

During the introduction of additional tools, great care was taken to ensure that they had a low hurdle to entry and did not conflict with already existing tools. In the teams' everyday work, a large part of the communication already takes place in emails and chat messages. During discussions with the team members, it quickly became clear that emails were perceived as too distant from the daily work routine and often represented a disruption to the usual workflow of a developer.

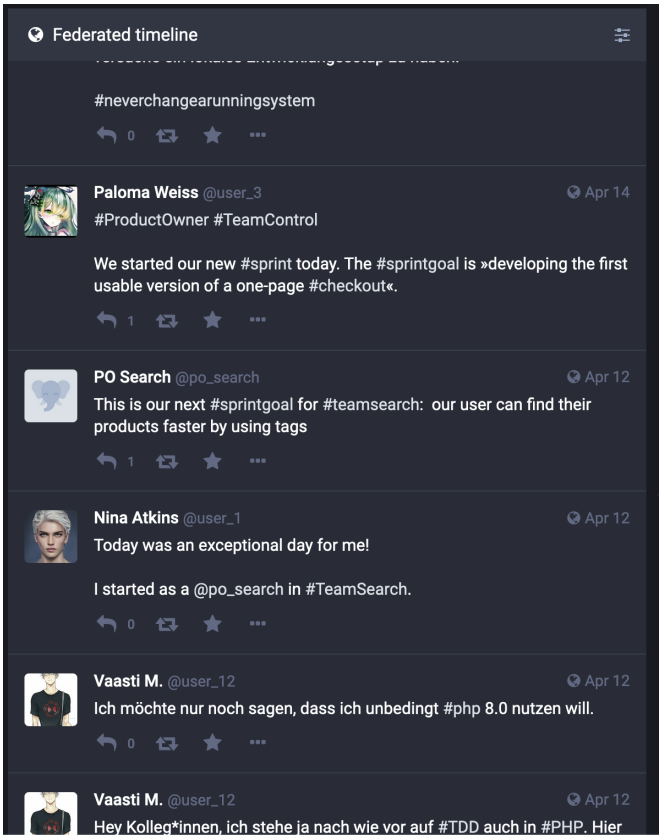

Fig. 3. Federated Mastodon timeline of an agile project.

Chat messages were perceived as less disruptive, but the quantity and the feeling of having to respond to them in a timely manner led many developers to comment that chats were perceived as stressful and distracting. As a result, the tools to aid in creating a sense of community within the teams had to meet the following criteria:

1. Enable ad-hoc interaction without the need to install an application on the end device to include colleagues who have more limited rights on their end devices than developers.
2. Should not be perceived as a synchronous form of communication where psychological pressure is built up to respond promptly to a message.
3. Is intended to open up a separate communication channel that is not seen as officially required, but offers a voluntary option of exchange with colleagues.
4. It must be a tool that can be installed on the company's own servers to ensure privacy and IT security.

After researching the topic for a while, the choice fell on Mastodon (2022). Mastodon is an open, open-source microblogging platform that can be operated on one's own servers. With it users can exchange short, 500-character messages. In addition to a personal view, in which users only see the messages of those they follow, they can also follow and react to the messages of all users on the server in a global timeline view.

By using tags, messages about topics can be linked to each other. Especially by subscribing to tags, users have the possibility to stay up to date about activities on a certain topic. Figure 3 shows a section of a simulated timeline in which users have shared their messages with the company. For data protection reasons, no real screenshots of the company can be shown here.

Besides the private exchange, the Scrum Masters established an active conversation with the teams about the state of the project. At the end of a sprint, new features with screenshots and descriptions were uploaded to the platform by the product owner where members could share and comment on them. Although similar release communication had also taken place before in emails, the amount of interactions and thus active engagement with the features within the release was higher. This may be due to the fact that most of the participants already had established communication behaviour through Twitter that they could draw on here.

Tags were used in the project mainly by the developers. On the one hand, in the context of the book club (see section Book Club), and on the other hand, in technological discussions on certain topics, similar to a community of practice. Topics such as #scala, #refactoring or #cleanCode were discussed here. It could also be observed that the topics and discussions were taken over from one channel (Mastodon) to another (chat or the Tech Weekly) in order to be explored in more depth and detail there.

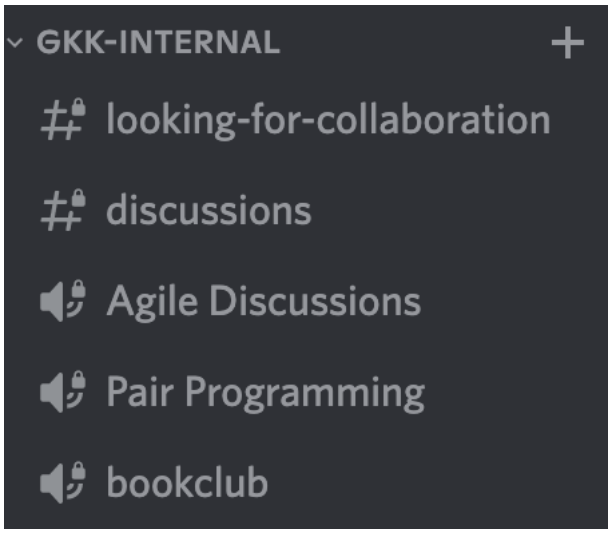

Fig. 4. Community Channels on Discord

While the introduction of Mastodon addressed the formation of informal communities of practice, another tool was needed to compensate for the lack of physical proximity in the workplace. Working together on a problem in pair programming sessions or discussing a topic is more likely to happen when you are in the same room. This spirit of spontaneous collaboration that happens when working "side by side" was addressed in another experiment. Here, Discord was used as a multimedia community tool which was already used by many developers in their free time and was therefore already installed on many computers. It is a tool in which community areas with different channels can be created. Channels can either be purely text-based or can support both audio and video streams from several users at the same time. Figure 4 shows an excerpt from the channels of the 2020 project with two text chats and three multimedia channels used for discussions, pair programming or the book club.

The agile coaches and scrum masters supported the teams in carrying out remote pair programming. The channels in Discord were established as a flexible meeting point where a developer would proactively join the "Pair Programming" channel to signal their availability and interest or need to the team members. After one sprint (2 weeks), this had already become a regular habit for two teams, where the developers visibly developed more fun in their collaboration, which they also expressed in conversations and retrospectives.

Once a week, the developers met in the Discord channel created for this purpose, where they discussed the topic of the book and the chapter they had read. The discussion of the book's topics resulted in concrete initiatives that were further pursued and discussed by the developers outside of the book club. Two complementary events should be mentioned here that served in facilitating these efforts. Firstly, the technological weekly, in which the developers could discuss these topics across team boundaries and then take the findings back to their respective teams for implementation. Secondly, the possibility to share thoughts via Mastodon and thus also make spontaneous ideas available to colleagues while reading the book or further researching the topic.

The discussion of the book's contents in the book club led to a further increase in the developers' assessment of code quality, as they were able to take what they had learned and discussed into their everyday work.

2.3 Informal collaboration events and team building

As a third impulse, social events were planned as optional activities in which the team could get to know each other better as individuals. The demographic composition of the 2020 teams was relatively young, with an average age of 24, and came from a variety of countries (including India, Poland, Tunisia, Germany, and Belarus). Before the pandemic they were used to socializing, even in their free time.

The lockdown made it impossible to organize group events on site with the result that the accompanying changes were felt all the more strongly in their day-to-day work. Although some team members met in self-organized virtual gaming sessions, the team members perceived the reduced contact with some of their colleagues negatively and communicated their need to do so during the retrospectives.

The agile coaches and scrum masters therefore supported the teams in planning and conducting virtual events. Once again, Discord was a major tool for ensuring good communication. In this way, puzzles were solved in virtual Escape Rooms together as a team or in smaller groups against each other. These experiences strengthened social cohesion and provided enough impetus for the team members to start planning their free time together on their own again.

3 Digital team collaboration in workshops and training

When we all returned to productive work from the first lockdown in April 2020, we were probably all faced with a new challenge: working from home. Some already had a study and their peace and quiet, others made themselves "comfortable" on the edge of the bathtub - regularly visited by their beloved offspring.

Certainly, here too the truth lies in the middle. This and similar circumstances lead to a statement that was almost inflationarily made: »The topic xy is too important! We have to do that when we are back on site«.

The work from home phase lasted longer than many thought, small work corners were set up, headsets were bought - and a new way of working crept in: Appointment after appointment - literally non-stop.

When some even wanted to take advantage of the lunch break, a new sentence kept coming up: »A digital workshop? Sitting in front of the computer all day? Well, that's not possible! I'd go completely bonkers!«.

And there we had the two reasons why, with regard to knowledge work, collaborations faltered somewhat.

Even in training, in our case a coach training of several days, hung in the air.

»Coach training has to involve all senses! Sharing, changing places and the use of various media are core elements of our training. The next group will have to wait until after Covid!«.

After we celebrated the first working-from-home anniversary, one or the other topic slowly came up. »We should meet again sometime, but the incidences are so high right now...«.

But what are these topics why we would urgently need to see each other again?

Let's look at some examples:

1. Problem Solving

   Most problems are not solved alone and in a quiet room. It requires a heterogeneous group, consisting of people of different ages, seniority, education, experience, hobbies, etc. Even if the situation seems hopeless, someone always has at least an idea and the momentum is restored. On site, this can be supported with creative techniques, such as Legos on the tables for thoughtless building all the way to lego serious play. And there we have the problem again: standing together at the table, touching Lego.

2. Team retreats / Team building

   Standing together on a large wall, drawing a timeline and collecting the topics with Post-Its. Prioritising with dots and pushing cards back and forth. Spending the breaks together, chatting and bonding.

3. Process analyses

   Process analysis relies on going on site. A trainer once said: "only what the eye sees, the heart believes". This is certainly true when it comes to processes that can be touched, however it becomes even more difficult when it comes to indirect and administrative processes. By their very nature, these are not tangible. Especially since signals or messages are conveyed in fractions of a second - thus invisible to the human eye.

4. Team development

   Each team member should be integrated into the team with their individual strengths. But an individual also wants to be perceived in their entirety, which is difficult to do digitally. The only things that can be transmitted are sound and a small part of the face.

5. Training and education

   The pinnacle of collaboration. Learning is a personal process that depends on each individual's preferences. The auditory type prefers to learn by listening and speaking, the visual type by seeing or observing, and the cognitive-intellectual type by reading and thinking. All of these types can be addressed digitally. But what about someone who prefers learning by touching and feeling? Another important factor is the learners' trust in a protected learning environment, which can be crucial for the success of a training such as an agile coach training.

Upon first glance, it is obvious that all of the examples shown can, and indeed must, happen on-site.

Now, however, we live in a world that is becoming increasingly interconnected. If nothing else, Covid-19 has been a catalyst for remote collaboration. People have relocated from urban centers to achieve a higher quality of life. Teams are a reflection of a globalised business world. When other team members are based in Spain, there is no longer any question whether the colleague from Munich will come to Stuttgart.

3.1 Tools and media

Let's have a look at how the five use cases were conducted online and what tools and media were used to support them.

In all examples, we have found it helpful to use platforms such as MS Teams, Skype, and Zoom. These tools are capable of combining meetings with sound and images, notes and attachments, as well as a chat. Many still find it awkward to turn on the camera as well as the microphone. But this is the only way to recognize and respond to changes in expressions in others' faces. Silence on the other end of the line could mean that the midday slump is hitting with all its might, or that personal life demands more attention. The camera being switched off can also tempt you to work on something else, such as the flood of emails. However, silence can also be a resistance to the topic just discussed. In that case, it is dramatic if it becomes entrenched and is not resolved.

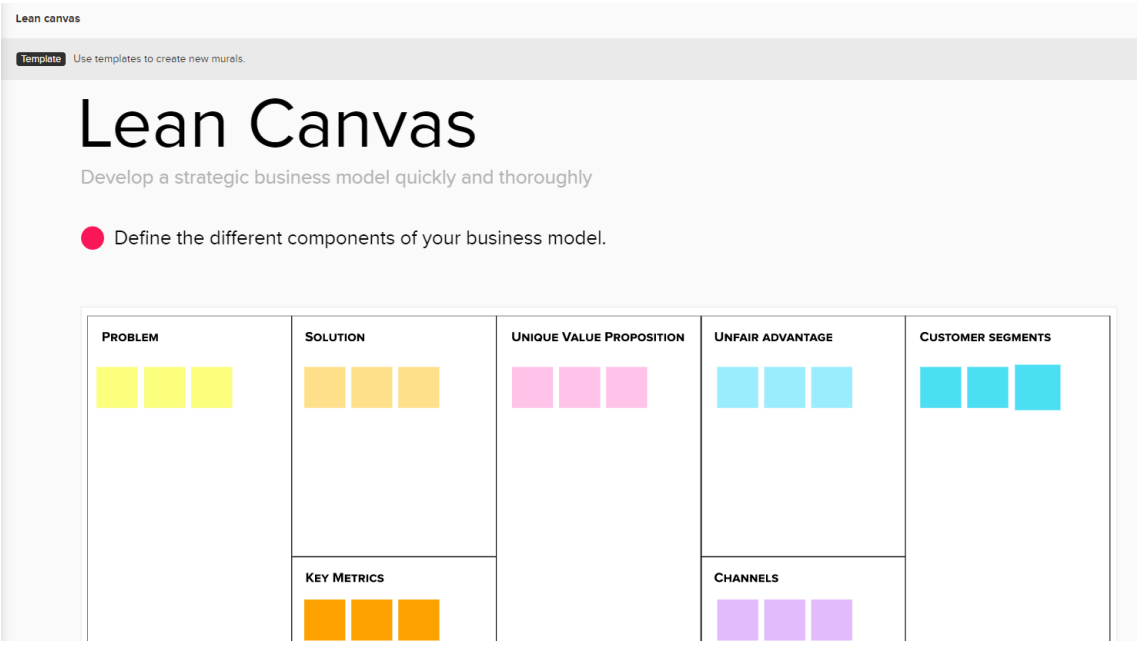

Fig. 5. Digital whiteboard with a lean canvas.

A whiteboard and many colorful sticky notes were and are often used as a common working platform offline. When online, mural (to name just one tool) is a good choice (see fig. 5). Here, everything is possible that is also possible offline - and even more. Coloured sticky notes don't stick, but they remain in the same place

where I posted them, even weeks later. Furthermore, the notes are digital: I can find topics again without having to search manually over entire walls.

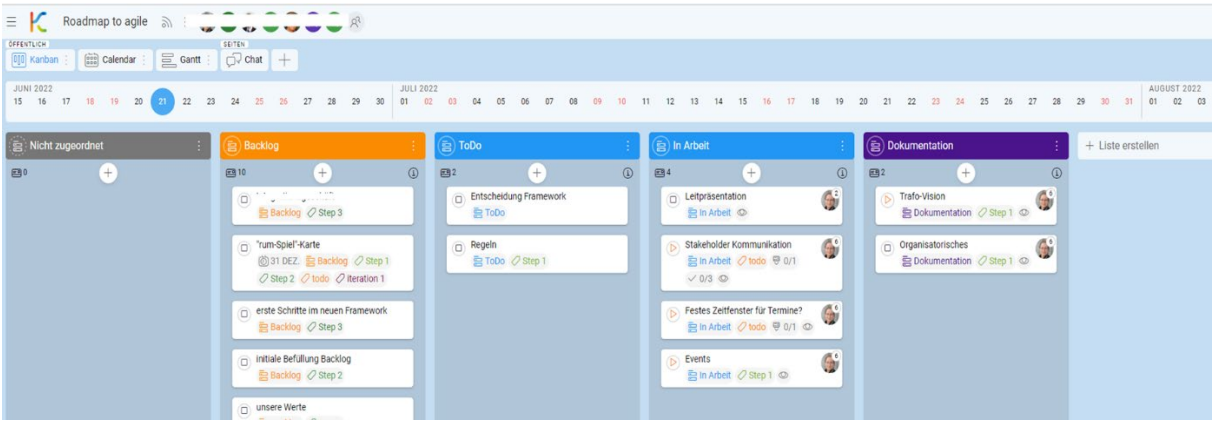

Fig. 6. Virtual Kanban board.

What the Kanban board (see Fig. 6) with T-Shape cards is offline, the KanBo tool is online, except that I can create columns, cards and templates very easily here - without having to awkwardly redraw columns and, in the worst case, having to redraw everything again. However, it can't do more than the offline tool. Links to cards can only be represented in a very complicated way.

3.2 What good are tools if we have no idea how we want to use them?

Let's imagine we want to optimise a process, such as the processing of a request - but we can't meet in person.

We could map the process online as a value stream analysis or using process mappig (as can be seen in Fig. 7).

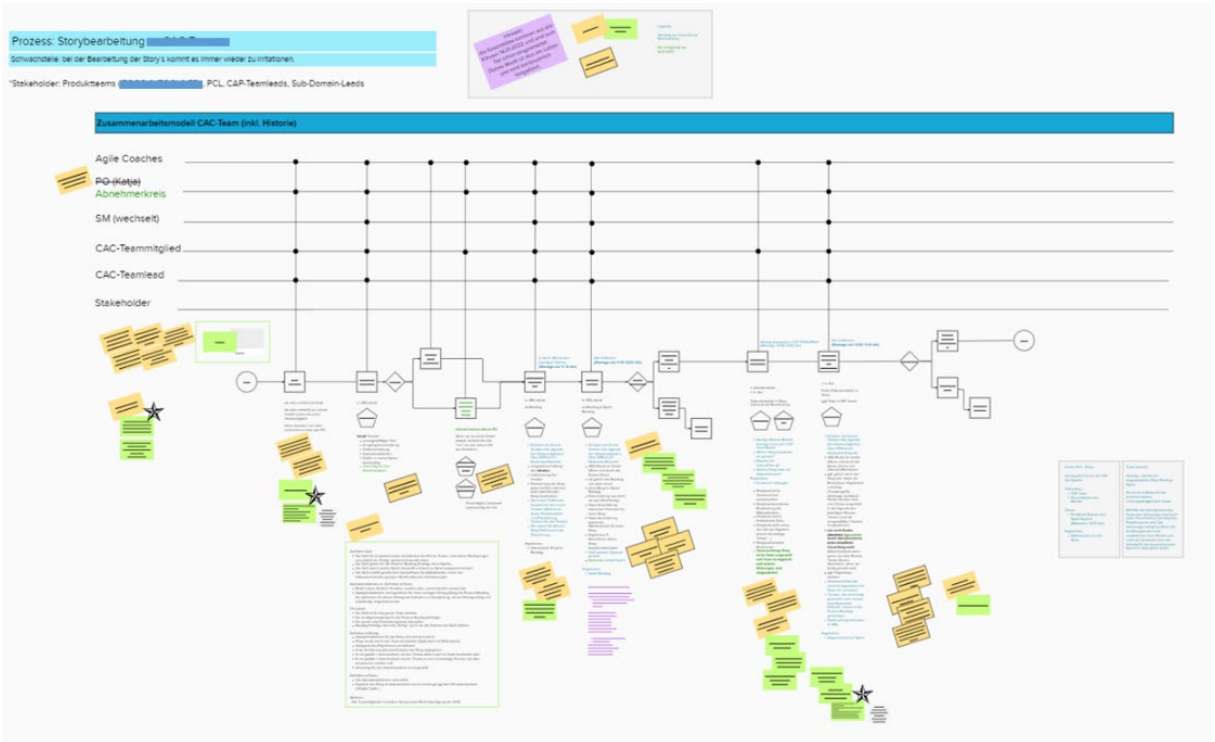

Fig. 7. A process mapping session in mural.

Ideally, we then have a moderator for our workshop who creates a template for us in mural and guides us through the process with questions.

Since each participant in the workshop has write privileges, really anyone can share their thoughts and ideas at any time.

Figure 8 shows an example of how a mural can be used even more creatively. For a team development workshop, for example. In the example given here, the one-day team development had to take place online. The challenge for the facilitators was to keep the participants busy so that they wouldn't be overwhelmed but still be productive.

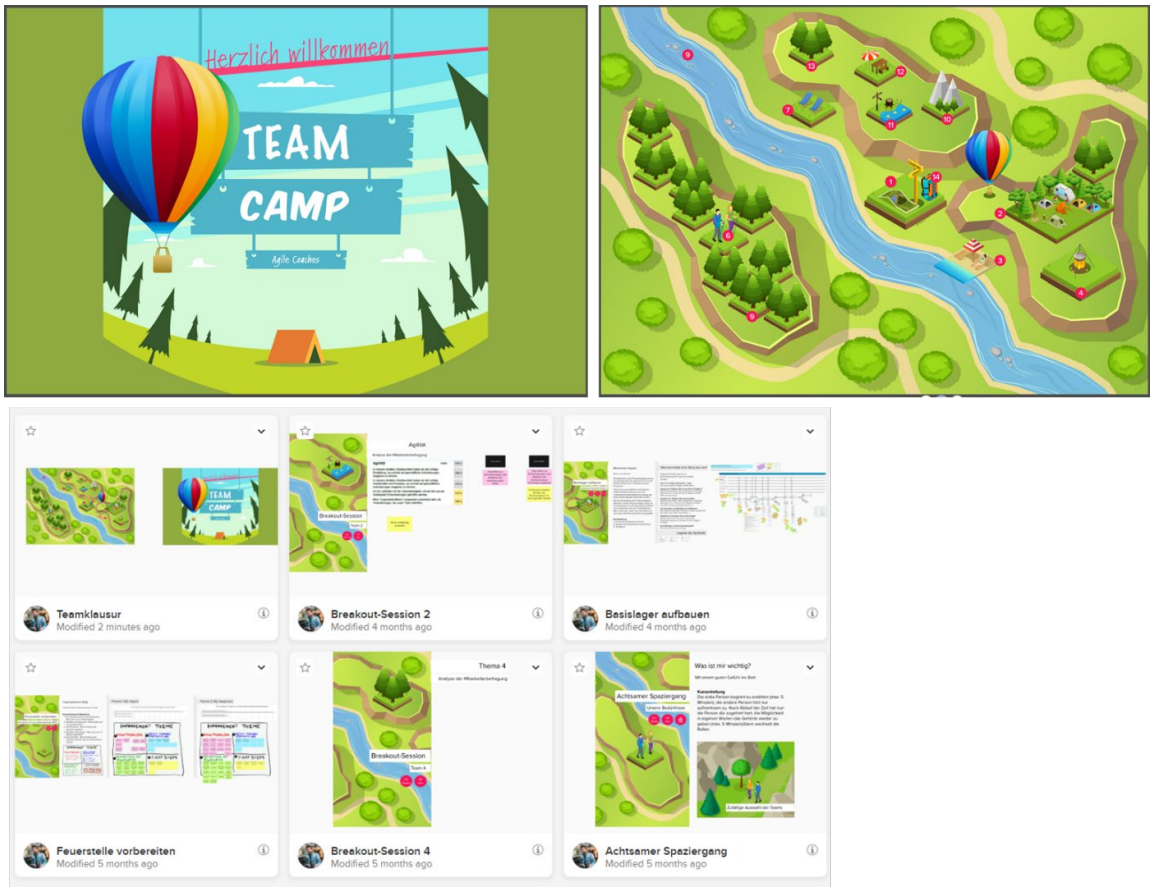

Fig. 8. Use of a mural for a virtual team retreat.

They decided to frame the entire day with a story:

- The participants embarked on a digital journey to a camp.
- All topics of the day were presented with analogies. The journey to the camp was a mental journey on a hot air balloon. The mental journey covers our entire camp trip by way of arrival (arriving at the setting and the day), setting up the tent (agenda and preparing for the day), campfire (joint lunch break) and the bear attack (the sensitive topic of the retreat to be addressed). The story continues agenda point by agenda point, so more details are added. In this way, the mental journey becomes the anchor point. This relaxed start into the day is used to prepare for the next steps.

- Mural is not only a mural, but can contain links to other murals and team rooms, allowing participants to change rooms. These become even more effective if the participants can actually change rooms during the retreat. If this is not possible, turning the chair and thus the direction of the view should facilitate the necessary change of perspective.
- At the end of the camp, everything is carried away from the forest again - we also do this by documenting the findings and actions and ending and concluding the retreat and the day with the mental journey.

It goes without saying that all this has to be coordinated and planned in a schedule in order to be able to adapt the execution if necessary.

Let's move on to training - in our case, a coach training to become an agile coach / transformation coach. A transformation coach provides support to groups during their change process. A problem-solving process can underline this.

This means that a transformation coach must be able to react to diverse situations, circumstances, and changes in group dynamics. This is why the training cannot be seen as a set of methods if it aims to be holistic.

Therefore, the first step should be to establish a trusting learning atmosphere. This is accomplished both offline and online by creating transparency. To achieve this online, you will need to switch on your camera and microphone. But it also involves getting to know each other and forming a relationship. In person, there are few more efficient ways than drinking coffee together and 'gossiping in the coffee kitchen.'

In our example training, parcels were prepared for a joint breakfast. Of course, it is important to consider the expiration date of individual products. Other anchor items were also included in the package, such as a learning diary and the contact details for a personally selected mentor (who acts as a contact person for the coachee). Breakfast is taken by everyone at their own place during the ongoing team call. Accompanied by the coaches.

Depending on the type of learner, all senses must be addressed didactically. "Hearing" and "seeing" can easily be represented online. So what can help the haptic learner? Well, we are at home... and that is where either children or young-at-heart adults live. So there are no limits to the imagination here: be it Lego, pencils or a well-stocked kitchen to find suitable resources.

Asking the following guiding question to start the day can help you to think about working from home: Which item on your desk at home would not be there in the office but helps you to work in a concentrated way?

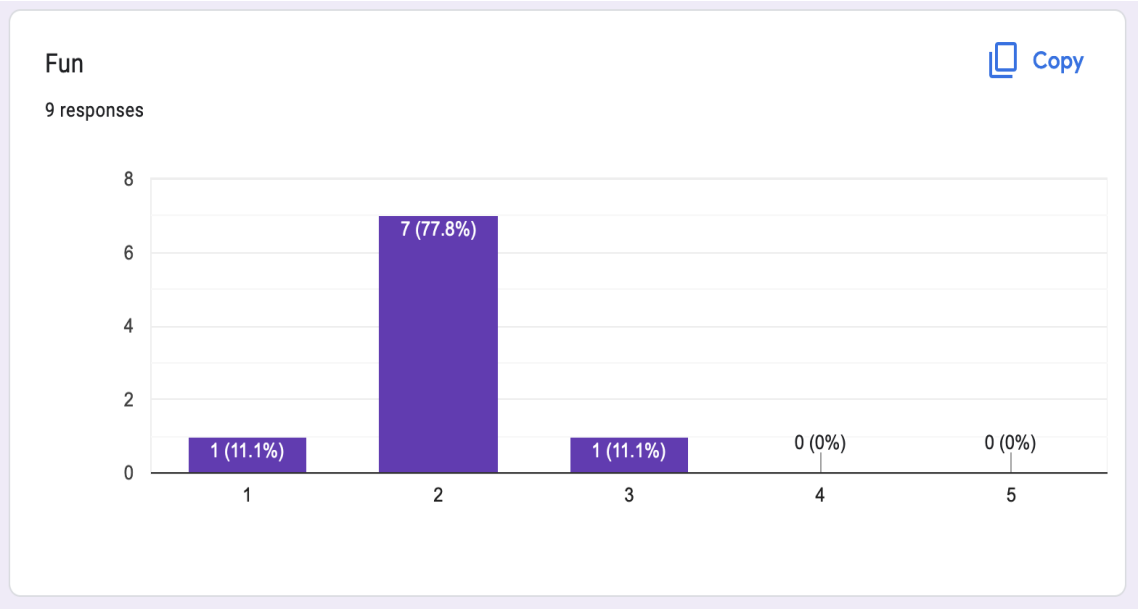

Fig. 9. Fun and satisfaction related assessment at the end of 2020.

Let's look at another method for perspective change and collaboration: walks. Just because we are at home, using the laptop and its camera and microphone, doesn't mean we are tied to the desk. Depending on the task at hand, pairs or groups are formed. They meet at an agreed time for a joint phone call and then start walking while doing the exercise together.

4 Conclusion

What these examples and our experiences during the lockdowns have shown is that it is possible to work on complex issues online. And it shouldn't be seen as a necessary evil, but should be seen as bringing its advantages to training and workshops in.

Figures 9 and 10 show how the team ratings of the dimensions "Technical Quality" and "Fun and Satisfaction" have changed over the course of six months. Both the introduction of the tools and the establishment of new events helped the teams to get through the lockdowns with positive changes. However, it must also be mentioned that the rollout, especially in the beginning, was not a no-brainer.

The introduction of new communication platforms needs strong impulses and a content-related stimulus, so that an added value is identified and invites participation. This role was taken over by the coaches and scrum masters, who used "calls to action" to encourage to participate and thereby ensured that the platforms were more than just a collection of unused user accounts. The solution to this cold start problem is very individual and will always have to be adapted to the respective context of use.

A full-day workshop with various elements such as change of location, involvement of physical resources, and the conscious use of the workspace is a welcomed change from the familiar on-site workshop, if the participant has an undisturbed workspace at home.

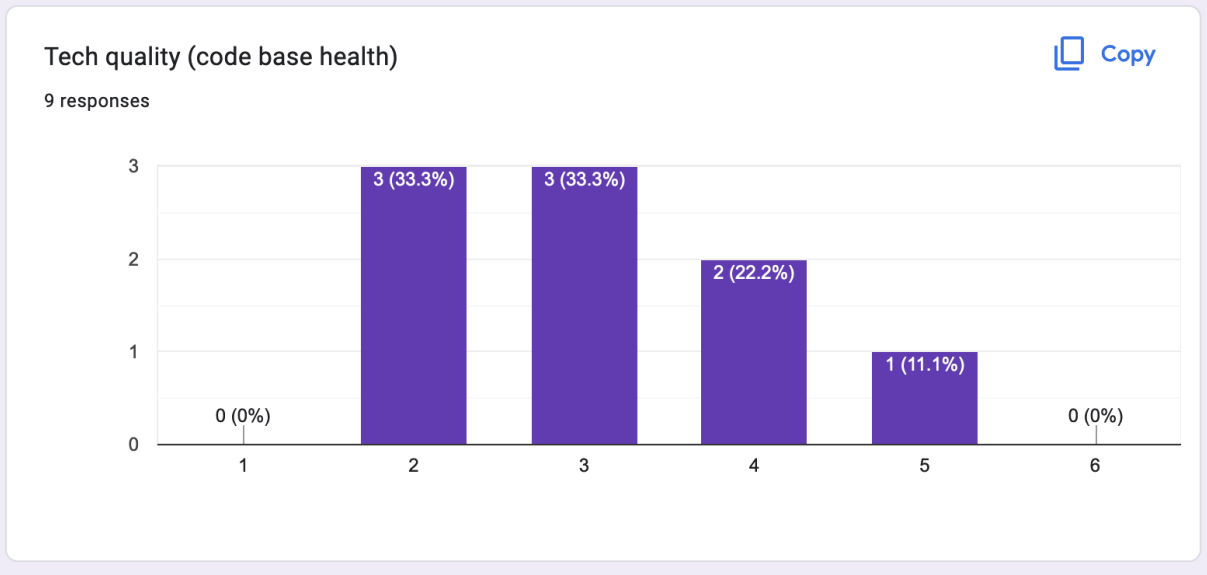

Fig. 10. Technical quality evaluation result at the end of 2020.

One feedback that we received after this online workshop was: "The counter shows a meeting duration of 8:30h and I don't feel like I urgently need to shut down the laptop - on the contrary, today was consistently fun and we exceeded our goals!"

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7

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Applying the flipped classroom methodology to international students: A case study

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Abstract. The combination of traditional learning with more innovative teaching methods such as the so-called flipped classroom is, even today, a challenging issue that is not easy to implement into university teaching. In this sense, this chapter presents and defends the use of this methodology as an ideal teaching technique for subjects and seminars addressed to international students.

To this end, the real results obtained after its application in the subject European Criminal Law and Justice in the international semester of the Faculty of Law at the University of Valladolid will be presented for discussion, highlighting the multiple advantages that this method offers to both professors and students when it comes to transmitting and satisfactorily acquiring the basic competences pursued by the subject. It will be concluded that the results obtained empirically show the success of using this model in extraordinarily small groups, but that it is still necessary to evaluate its possible viability in larger groups or its extrapolation to national students.

Keywords: flipped classroom, international programs, COVID-19 pandemic, legal studies.

1 Introduction

The new educational model that the so-called "Bologna plan" encourages is based on the revision of the roles, methods and instruments used in university teaching, orienting them towards the development of a more active role of the student in the learning process. After the implementation of the university degrees, many university professors have tried to adjust their former methodology to these new postulates by means of different approaches that we can commonly describe as teaching innovation.

Despite the above, the teaching innovation methods proposed so far do not always fit well in all kinds of subjects. There are disciplines that, due to their idiosyncrasy, are less susceptible to the implementation of changes. Such shall be considered the case of legal studies, which today are still taught, for the most part, by means of a methodology based on the master class. This traditional method, built on the lecturer's oral presentation of the different topics of the subject matter during the sessions, normally entails little or no active participation of the student in the learning process.

The aim of this contribution is to propose the application of a teaching methodology that makes use of the "*flipped classroom*"[1] as an ideal teaching resource to foster the active participation of students. In broad terms, *flipped classroom* methodology is considered to be that in which students must study and/or prepare subject materials provided by the professor prior to the class sessions. Class sessions are thus oriented towards the search for active learning on the part of the student.

Consequently, the main characteristics of this proposed methodology, its different phases, and the actual possibilities of implementation, will be presentd along with the empirical results drawn from its actual application to a real scenario of teaching of criminal procedural law in English addressed to international students

2 Methodology

2.1 The selection and preparation of materials by the professor

In order for a methodology based on the flipped classroom to be successful, an extra effort is required from the lecturer, especially if we compare it with the effort usually required for the development of a teaching method based on the master class. This extra workload is manifested, primarily, in preparing and selecting the contents of the subject. It is necessary to thoroughly study, select and, above all, make the materials needed for the session punctually available to the students before each inverted class. Furthermore, copyright protection must be bear in mind if the materials have not been exclusively created or published by the lecture and, even in the latter scenario, if they are not under a creative commons license.

Notwithstanding the above, the *flipped classroom* methodoly goal is not only to provide students with materials or readings before each session, but also should be oriented towards the development of dynamic and active learning during the sessions in classroom. Thus, the professor must complement these prior materials with any other instruments, means and resources that enable him/her to achieve the learning objectives intended, such as the implementation of a continuous assessment system, the planning of working group oriented activities, or the organisation of discussion sessions with the participation of the students of the group. The preparation of these materials and the adaptation of the assessment system is, therefore, a former duty of any professor who wants to use the flipped classroom method.

In the case of international students, the materials selection phase is further problematic. Firstly, language is certainly a major barrier that has to be borne in mind. The selection of content in a non-native language has to be made with great care, especially in a discipline that uses such a specific terminology as legal studies

[1] We use the term *flipped classroom* because it is the one commonly used by both specialised doctrine and the general public when referring to this method based. However, other authors have proposed different terms for this same technique, such as *flipped learning*, *reverse instruction* or *flipped teaching*. On this terminological issue, *see:* Prieto et al. (2021, pp. 149-170).

and, in particular, procedural law. Secondly, the international context of the student has to be taken into account when establishing what the priorities for learning should be, adapting the content of the subject, as much as possible, to his or her circumstances and needs. Likewise, the communication channel and platform to be used for the provision of materials and assignments must be established beforehand, taking into account that the tools normally used for this purpose (e.g. Moodle) may not be fully available in English or may appear by default in Spanish, which will make access difficult for the international student.

2.2 Learners preparation before the session

The success of the *flipped classroom* method is based on the students' prior preparation of the contents to be developed in each session. However, it is important to face that this prior preparation might not be always ideal due to a variety of factors. Among the factors that can lead to the inadequacy of the students' prior preparation, the most important one is their greater or lesser subjective tendency to collaborate in the development of this kind of methodology.

In fact, lecturers applyhing this kind of methodology must take into account that not all students will be equally receptive to the implementation of a learning method which, to a large extent, will require them to work on it beforehand and continuously throughout the course. Some authors have devoted their research to this specific problem, classifying students into those who are inclined to embrace the method (*flip endorsers*) and those who —passively— resist its application (*flip resisters*) (McNally et al., 2017, pp. 281-297). Therefore, the professor who decides to apply this methodology must bear this factor in mind when planning the course, trying to promote, as far as possible, that those students who are more reluctant to the application of this methodology end up supporting it.

In the context of our specific case study, experience shows that international students tend to be more receptive to the application of this kind of methodology (they are, in general, *flipped endorsers*). This is mainly caused and explained by their different background: in other higher education systems — especially in the European context—,the flipped classroom-based methodologies are widely implemented and accepted by the entire academic community. However, in our opinion, it is also influenced by the perception of this sector of the students that a method based on active and continuous learning will enable them to obtain a better final grade in comparison with the results that they would obtain through a traditional methodology.

That said, the success of the flipped classroom method will depend, to a large extent, on the prior work developed by the students before each session, so it is important to ensure that this prior preparation (or homework) actually takes place. A good way to guarantee that students will come with sufficient knowledge is to ask them to carry out a previous activity (test, theoretical or practical exercise) about the content to be discussed in each session. In the case of international students, experience shows that when this solution is used, it is also advisable to adapt this type of exercises to questions more related to their State of origin and their domestic issues, provided that the nature of the subject allows to do so

(Hernández López, 2022 y Picó i Junoy et al., pp. 353-360). In our case study, exercises were adapted to allow students to elaborate on their national law and applying European case law (CJEU and EcHR) to the matter.

2.3 The activities within the flipped classroom session

The central stage of this method is the inverted classroom sessions. It is in these sessions that the activities aimed at consolidating the previous work carried out by both the professor and the students should be developed, leading to the latter acquiring the general and specific competences pursued by the lecturer and stated on the subject syllabus.

There are different models that can be used to achieve this goal. Among them, one of the most common consists, as we have already pointed out, of proposing to the students that they carry out a test or activity before the flipped classroom session takes place, which will later be the central object of discussion during the session. In this way, several objectives are simultaneously achieved: on the one hand, students are obliged to actively prepare their learning, as it will not be enough to simply read the materials offered, but they must be prepared to discuss the results in public. On the other hand, student participation and interaction with their peers is actively encouraged, thus allowing them to practice and improve their discursive and expository skills. Finally, as a result of all of the above combined, the debate that arises within the session will allow the professor to easily identify the issues that need a further clarification or explanation, allowing him/her to devote his/her efforts to explaining and solving these questions instead of the less problematic ones. The method consequently provides the professor with useful tools to tackle the so-called "curse of knowledge", understood as a situation in which the professor, because of his or her status as an expert in the matter being discussed, is not able to identify for him or herself which issues or topics may be more tough for the student, on the assumption that the student has the necessary background to understand what is being presented (Camerer et al., 1989, pp. 1232-1254).

In the context of international students, it may be considered as a good practice to provide practical theoretical exercises before each session instead of a test. In these exercises, the learner will solve advanced questions on the topics covered in the study materials previously provided. The flipped classroom session will then focus on professor-student discussion of the results of these exercises, contextualising the problems encountered and complementing the session with the necessary explanations to reinforce the students' knowledge of the topic.

2.4 Assesment rewards to reinforce active learning

As we have previously outlined, the methodology described so far requires an extra and continuous effort on the part of both the professors and the participating students in order for it to fully develop its objectives. This extra effort must be then rewarded with an incentive for the students who follow this method, so that they openly perceive its benefits in their learning process.

In this line, incentives or rewards can be granted both from the point of view of the contents of the subject (e.g. excluding the topics discussed in the flipped classroom sessions from the final exam) and from the point of view of the final assessment (e.g. the possibility of using a continuous assessment method instead of a final exam-based one). In the international context of this study, the theoretical and practical activities and their discussion in class were part of the assessment of the students. Moreover, successful participation in this system was rewarded by reducing the theoretical subject matter for examination, so that the student only had to take a final practical exercise (practical case arisen from a preliminary ruling request) in order to pass the course.

The combination of various incentives or rewards may also lead to better results. For instance, in 2022, a specific seminar was organised for international students participating in the University of Valladolid's International Semester Program. The flipped classroom methodology was partially applied to this seminar. Attending to the seminar, preparing and studying the materials previously uploaded to Moodle and actively participating in the oral discussion during the session will allow them to pass the activity. In addition, they could optionally do and submit a guided written assignment to improve their final mark in the whole course. The following data were obtained, revealing that the reward effectively reinforced the interest of the students in the seminar:

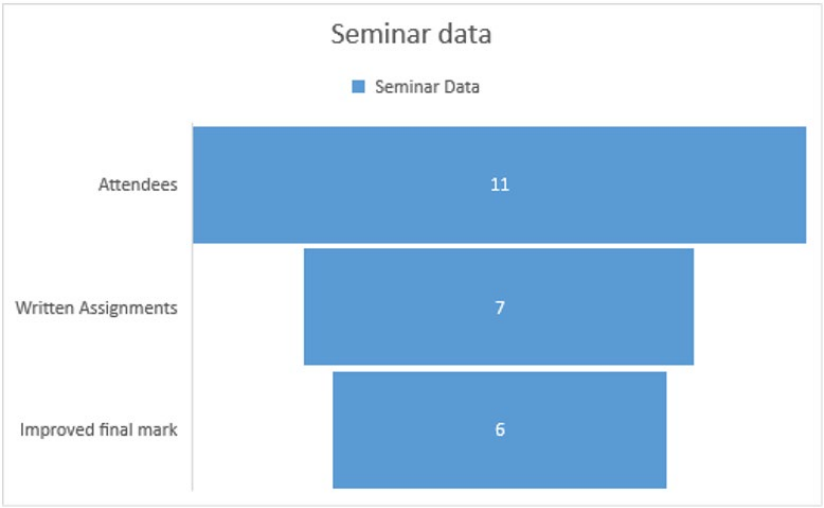

Fig. 1. Raw data from 2022 Seminar on EU Agencies and bodies.

2.5 Gamification techniques as an optional resource

Although it is not the purpose of this contribution to reflect on the concept of gamification (Deterding et al., 2011) , it is necessary to delimit its meaning for the purposes of this study. In this sense, we consider gamification the introduction of game mechanics in the classroom with the aim of enriching the learning process.

Gamification is therefore aimed at achieving an end, a benefit, which will normally consist of better assimilation by the student of the content of the subject and, ultimately, an improvement in the overall results of the group.

In this sense, it is essential to explain to the students beforehand the benefits that this technique can have on their learning, the system that is going to be used and, where appropriate, the impact that the use of game mechanics will have on their assessment. In the specific methodology presented in this paper, gamification is only used as a complement to strengthen the objectives pursued by the flipped classroom methodology.

After the Questions&Answers, and where appropriate, the clarifications made by the lecturer during the sessions, all groups immediately participate in an exercise in the form of a competitive game on the contents that have been covered in the session. This exercise is presented in the form of a test carried out through a platform that allows the participation of all the students —individually or in groups— and which assigns and displays the answers and results in real time.

It is essential for the achievement of the objectives of this method that the gamification tool used technically allows the scores and answers to be displayed in real time due to two fundamental reasons: on the one hand, this feature allows what is strictly speaking a simple test to be perceived by the students as a playful and competitive activity. On the other hand, the immediate results of the test allow the professor to identify in the same session which questions are more difficult for the students or require further explanation, a task that can then be carried out right after viewing the results. The real-time correction system thus provides the teacher with useful tools to tackle the "curse of knowledge" previously mentioned.

In order to stimulate student participation in these activities, it is advisable to establish rewards to motivate their interest in the gamification-based method (along the same lines previously explained on section 2.4). These incentives will usually be oriented towards the concession of a benefit in their final assessment according to the results obtained in these competitive tests. In the real case in which this methodology has been applied, it was decided to establish a general ranking of results, so that the members of the groups with the best overall results throughout the course obtained a small bonus in their final grade. The following table shows the actual results corresponding to one of the tests and the classification of the groups according to the number of correct answers and the speed of response. The Kahoot! platform suite was used to perform this test[2]:

Table 1. Individual results of the sample test.

Final Scores				
Rank	Player	Total Score (points)	Correct Answers	Incorrect Answers
1	Group 4	9541	8	0
2	Group 3	9499	8	0
3	Group 7	9492	8	0

[2] https://kahoot.com/schools-u/

4	Group 2	7097	7	1
5	Group 6	6454	6	2
6	Group 5	5858	6	2
7	Group 1	2772	3	5

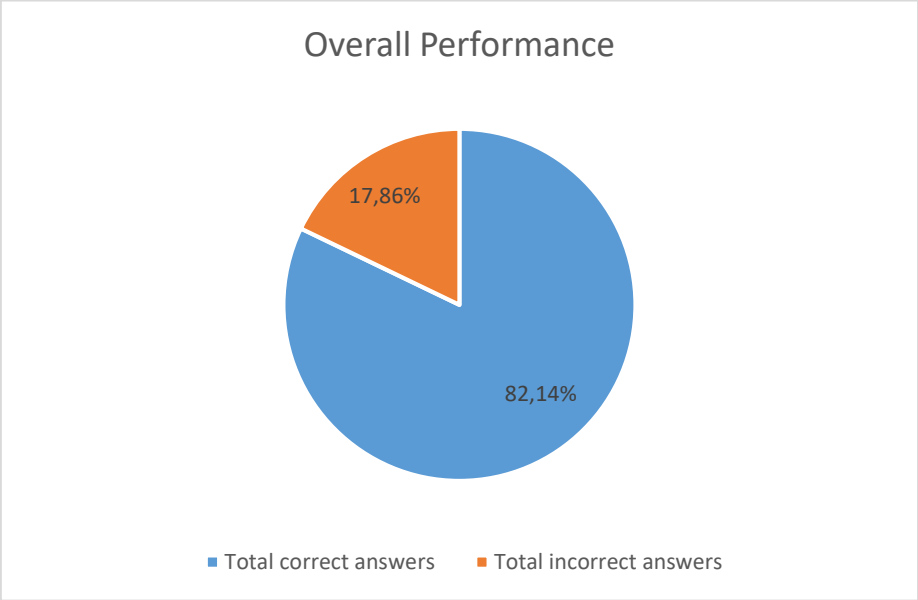

Fig. 2. Raw data from 2020 specific seminar

3 Results

The methodology described above has been already applied in a real teaching scenario within an international semester program. The results presented below correspond to the conclusions drawn from anonymised data gathered during a complete academic year (2020-2021) and part of 2022, in which this method has been applied to a subject taken exclusively by foreign students and taught in English language:

(i) The method effectively encouraged student participation in the development of the subject content and promoted professor-student interaction. The degree of compliance with the tasks assigned and attendance at the inverted classroom sessions was nearly 100%.

(ii) It demonstrated an excellent capacity for adapting to temporary contingent situations, such as those arising from health restrictions or the suspension of face-to-face activity during the COVID-19 pandemic. ICT tools were used to develop part of the sessions without affecting the overall objectives pursued by the methodology.

(iii) Grades have been significantly higher than those obtained in those subjects where a traditional methodology has been applied. The average mark was an "A".

(iv) The students' perception of the method has been very positive, which translates into an overall satisfaction with the progress of the subject and the evaluation system.

4 Conclusions

The effectiveness of the proposed method has been empirically proven through its application to a law subject. Taking into account the results obtained by the students and their degree of satisfaction with the subject, the pilot experience has to be rated as extremely positive.

Despite all the advantages indicated, the results obtained, specially during 2020-2021, may have been conditioned by the specific characteristics of the sample. Indeed, the health situation resulting from the COVID-19 pandemic has led to a circumstantial decrease in the number of international students, causing that subjects exclusively aimed at this group of students have been taught within exceptionally small groups and coursed by students particularly interested in following the subject. In this context, it seems reasonable to deduce that the acceptance of this methodology has been higher by default, while some of its benefits may have been slightly reduced (e.g. student-student interaction during discussions). Therefore, it is necessary to apply this method to other scenarios and to carry out a comparative analysis with the new results obtained in order to be able to objectively evaluate its overall effectiveness.

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8

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Post-Pandemic teaching: Bringing the best of both worlds together

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Abstract. This primary research first used qualitative interviews with teachers and then a quantitative survey of students to check the acceptance of new methods and to derive the following recommendations for action:

The timetable should plan purely online and purely presentation days in a ratio of 50:50 for everyone involved. Part of the rooms should be equipped with fully digital LIVE streaming and on-demand recordings. Additional rooms should be equipped with a video conference system and group workspaces (interaction zones) should be created for students. Online exams can help reduce stress peaks.

Interaction time should be used significantly more for interaction and feedback, regardless of the medium used.

Keywords: Post-Pandemic Teaching, online teaching, classroom teaching, hybrid formats, importance of social relationship in teaching and learning.

1 Current challenges

1.1 Ad hoc digitized teaching and increased communication efforts

In Spring 2020 the world was holding its breath towards the corona pandemic. In Germany within a few days it was clear that there would be no face-to-face teaching in the 2020 summer semester. The teaching had to be fully digitized immediately. It quickly became clear that ad hoc digitized teaching did not meet the demand for high-quality, excellent digitized teaching. The challenges were, among others, software licenses, additional devices and supplemental equipment, virtualization support, online advice, skills on the part of teachers and students in dealing with new software. Certainly, there were clear differences between the individual disciplines: While computer science courses bring along an affinity for technology on the part of everyone anyway, this is not necessarily the case with humanities courses.

In many places, the effort was underestimated. In particular, the increased communication effort. Productivity suffers less than communication between colleagues or with the supervisor or with the students or even within the student body. (Federal Agency of Employment, 2021) In addition, rules for respectful communication at a distance had to be established first. (AOK, 2020) The short conversation in the corridor after a lecture is omitted. The small question to the seat neighbour is omitted. The conversation in the coffee kitchen is omitted. Brief oral communication became written as email and await a written response.

1.2 Laziness in arriving at university

The participation of students during synchronous digital lectures (live online course via video conference software) is less than during physical presence courses on campus. In average only 10% of attendees participate at all, the rest is silent. The possibility of each student to submerge into the unnoticed area is strongly provided in digital lectures (i.e. switching off the camera) and far greater than during courses on site where everyone is physically in the same room.

During the relaxation of measures to protect against COVID19 a partial return of students on campus was made possible. It was then observed that the returning students showed a much more inactive behaviour in class than it was used to be before the pandemic restrictions forced the lectures to be fully digital. Adding to that, students seemed to be very passive and required much more attention and explanation than before. Self-initiative in projects, workshops or preparation of papers was further noted to have decreased significantly, together with an increased late arrival rate.

The Social presence theory (Short et al., 1976) defines social presence as follows: "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships". For online teaching, this means that success depends on the possibilities of interpersonal involvement of the medium used. The strength of the social presence and the media used are causally related. The more intensive acoustic, visual and physical contacts experienced by the participants in the communication, the greater the involvement of the actors involved. The more intense the involvement, the greater the possible learning success.

Even the video conferencing tools that are booming during the COVID19 pandemic, which enable image and sound transmission as well as other options such as sharing a presentation, do not offer the same channels of perception as a meeting that takes place in a body-based participation. In Online-Meetings there is a lack of verbal, but also non-verbal and paraverbal cues such as gestures, facial expressions, prosody, clothing and demeanour.

However, the importance of this phenomenon is usually only recognized when this interaction no longer takes place in a face-to-face setting, but is shifted to a digital space, as is the case in computer-mediated communication.

Therefore, it is no secret that many educators complain about seeing black tiles in video conferencing tools. The importance of involvement and social presence does not seem to be known to all actors or to have been forgotten in the commitment to social distancing.

Also constantly looking at oneself with the webcam switched on causes further distraction, which is already given by it. Concentrating on one's own behaviour, on one's own appearance, leads to increased self-observation, which can subsequently lead to reduced social interaction.

It is not surprising that a certain inertia can be observed in the return to face-to-face classes: Face-to-face offers are visited by a few or completely rejected; active

demand for face-to-face offerings in the block to reduce travel times, online offers are chosen by more students than face-to-face offers and as result declining identification with the university.

However, if a face-to-face event is mandatory, the feedback often comes that the direct social interaction is well appreciated, generates a good mood and sets an improved learning atmosphere. It seems that there has been a forgetting of the importance of social relationships in the learning process. Of course, this does not apply to all students, and to teachers alike.

2 Two-stage research

The focus of this work is not the consideration of the past, but a possible solution space in the future. In order to consider both sides of learning and teaching, students and teachers were surveyed. First, teachers were interviewed in qualitative individual interviews and then students in a quantitative survey as online questionnaire. The research was conducted in April and May 2022.

2.1 Qualitative interviews on the further development of teaching with teachers and description of findings

For the qualitative interview, teachers were asked one-on-one about the development of teaching over the next two to three years. The interviews were conducted with open questions in order to anticipate as little content as possible and collect as many ideas as possible. For this purpose, seven lecturers from three universities of applied sciences were interviewed in April 2022. The evaluation was carried out using a qualitative content analysis according to Mayring (2000). The interviews focus on positive aspects of ad hoc online teaching as well as possible future concepts taking into account the preservation of a face-to-face university including the advantages of e-learning.

Although, qualitative content analysis is considered an established method in science education research, there are different ideas regarding which quality criteria and measures of quality control have to be taken into account. (Göhner & Krell, 2020) The criterion of reliability (Is the method reliable with repeated use?): The procedure claims to be intersubjectively comprehensible, to compare its results with other studies in the sense of a triangulation and to check their reliability. To estimate intercoder reliability, the entire qualitative content analysis was performed independently by two people and the results were then compared.

The criterion of validity (Does the method measure what it is supposed to measure?): Basically, ideas are determined by inferring the thinking of the test persons from the language recorded (Mayring & Gropengiesser, 2008). The content validity is supported by the theoretical framework by assuming a connection between language and thinking.

The results of the qualitative interview developed with inductive category formation and structuring were shown in the table below.

Table 1. Table with results of qualitative content analysis, Mayring (2000).

No	Category	Definition	Example	Coding Rules
A1	New way of semester planning, new space	Digital lectures require adjustments to the semester calendar	"We need to provide slots within the curriculum to include distant learning" P2	All aspects of semester planning
B2	Rooms change into self-learning areas with individual workstations and group workstations	Large lecture rooms with front-faced-teaching infrastructure is not required in masses.	"Our rooms are organized in the same way as in the 1970s, where there wasn't any digital learning"P1 "We need to invite students back onto campus via attractive coworking atmosphere to assist distant learning models by human interactions" P3	All ideas of new use of existing spaces otherwise conversion measures
B3	Open spaces for communication, creative cubes	Campus could be second "day-home" for students	"We need open creative spaces, incubators in a modern structural form" P3	All information about possible structural innovations.
C4	High-quality digitalized teaching that is excellent in terms of subject didactics	Not all digital learning tools are effective/ efficient to transfer knowledge and comprehension in the field.	"A lot of money and resources are wasted for IT-infrastructure and licences, which are not really helpful in my subject" P1 "Students often are much more experts in knowledge sharing with new technologies that lecturers' capabilities in didactics cannot fully perform to the required level" P4	All aspects of high teaching quality go beyond ad hoc digitalization
C5	Balanced mixes of synchronous and asynchronous, digital and physical elements	Key to successful knowledge-based learning is a unique distribution of scheduled access to learning content.	"Too much live digital teaching is also not convenient, some content should be accessible as recordings to support individual learning capabilities and rhythms" P3 "Too many digital courses create a large gap within the students as a whole group – supporting each other is reduced to a minimum and pro-active involvement in lectures is much lesser than in physical presence courses" P4	Any hints like synchronous and asynchronous can be brought together

C6	Classic interactive lecture formats online in favor of interactive conversations in presence	Understand the value of presence time.	"Personal communication and presence times should be perceived as valuable and used for active interaction, not for *reading aloud*" P7	Any hints on how to make better use of synchronous contact time
D7	Self-learning skills, personal responsibility for the learning process, new forms of collaborative work and learning	Not only knowledge is to be transferred, also capable humans for the society are key	"In this new world of teaching and learning, other competencies are more important than before, such as self-responsibility and self-learning skills as well as collaborative work" P7	All indications of which competencies will be more relevant in the future
F8	Written distance exams without supervision	Depending on subject, examinations could be made totally open.	"Subjects which require a detailed understanding of the matter and comprehensive transfer to complex problems, can easily be tested without supervision" P6 "I am very open to examinations without monitoring as it may unleash extreme creativity in complex matters" P3	All information on digital exams
F9	Digital exam with supervision in presence	Exams with grades must always be observed to prevent fraud and unfair scoring	"Students are very creative; I wouldn't want to mark results where I am unsure if the student is capable of passing the subject" P4 "A neutral and objective evaluation is not possible without supervision; online supervision is a tool in distant learning" P5	All information on changes to previous presence examinations

P_{number} means which respondent this quote comes from

A total of 9 categories were extracted from the qualitative content analysis. These categories are summarized in 5 cases A to F. A1 contains all information on changing the semester planning. It was requested here that separate face-to-face and online days be planned. Thus, travel times should be reduced, hectic between classroom and online lectures on the same day should be reduced and a meaningful distribution should take place according to the content of the modules in online or classroom teaching.

B contains all information on changing the structural structure on the campus itself. B2 shows conversion measures and new uses and B3 shows which new buildings will be necessary. This includes more individual and group work places for students in B1 and new creative rooms and incubator cubes for the particularly effective use of attendance times.

C summarizes the core, the change in teaching: C4 points out that high-quality digital teaching is more than just presenting the previous content online via a video conference tool.

C5 wants a balanced mix between synchronous and asynchronous, digital and physical elements.

C6 is intended to show the value of face-to-face and social interaction and allow for pure "reading" to take place online while face-to-face time is used for interactive conversation or training.

D refers to the changed meaning of certain competences in the changed world of teaching and learning online. The responsibility for their own learning should increasingly lie in the hands of the students (self-learning skills, personal responsibility) and the teacher should be understood more as a coach. Other types of collaboration should be established.

F deals with examinations: F8 demands written distance examinations without supervision and F9, contrary to this, demands digital examinations to be held on site.

2.2 Quantitative survey of the students based on the results of the qualitative content analysis

Basically, the quantitative scope among students, which was carried out after the qualitative interviews among teachers, serves to check the acceptance of the information from the teachers among the students.

A questionnaire with 6 questions was developed on the basis of categories A1 to F9. The first question was added as an open question to prevent students from being influenced by the following answer categories:

The balancing act between face-to-face and (online) distance teaching:

What wishes and ideas do you have for future teaching and learning opportunities?

Please write down your ideas and wishes here: open answer

The table below shows the systematic derivation of the questions:

Table 2. Table for the systematic derivation of the questionnaire

No	Category	Definition	Question	Answer options
A1	New way of semester planning, new space	Digital lectures require adjustments to the semester calendar	**No2** What division between the presence days on site at the university and distance learning do you see as suitable? (Provided that it is suitable for the respective course and makes sense in terms of content) Please choose an answer here.	*2 days presence / 2 days distance* *1 weekday presence / 3 weekdays distance* *3 days presence / 1 week distance*

B2	Rooms change into self-learning areas with individual workstations and group workstations	Large lecture rooms with front-faced-teaching infrastructure is not required in masses.	**No6** A possible redesign of the premises could make the presence stay more attractive: Please rate the following statements 1 no consent 5 full agreement	Workspaces as group workstations Cubes as individual workstations Learning rooms with video system Open spaces for social interaction Leave the premises unchanged
B3	Open spaces for communication, creative cubes	Campus could be second "day-home" for students		
C4	High-quality digitalized teaching that is excellent in terms of subject didactics	Not all digital learning tools are effective/ efficient to transfer knowledge and comprehension in the field.	**No3** Please rate the following statements about face-to-face meetings and distance learning. 1 no consent 5 full agreement	- Balanced mix of synchronous and asynchronous teaching and learning opportunities - Balanced mix of digital and physical elements - Useful digital teaching must be designed differently than classic formats in video conferences - Short, high-quality, interactive attendance times - Accompanying, digital learning in self-study - Significance of social interactions for learning is high
C5	Balanced mixes of synchronous and asynchronous, digital and physical elements	Key to successful knowledge-based learning is a unique distribution of scheduled access to learning content.	**No4** Should a possible face-to-face lesson ideally take place in block lessons? Please select an answer option here	No Yes, twice a semester for one week each Yes, once per semester for two weeks Yes, three times per semester for three days
C6	Classic interactive lecture formats online in favour of interactive conversations in presence	Understand the value of presence time.		
D7	Self-learning skills, personal responsibility for the learning process, new forms of colla-borative work and learning	Not only knowledge is to be transferred, also capable humans for the society are key	**No1** Open question at the beginning of the questionnaire	OPEN Answer

F8	Written distance exams without supervision	Depending on subject, examinations could be made totally open.	**No5** Rate the following statements about exams: 1 no consent 5 full agreement	- Online exams are easier - Online exams are more difficult - I only want online exams - I don't want online exams - Oral exams should take place online - Practical exams should take place in person - Digital exams should take place on site under supervision - The exams should take place as before Corona
F9	Digital exam with supervision in presence	Exams with grades must always be observed to prevent fraud and unfair scoring		

2.3 Results of the quantitative survey

A total of 104 students participated, of whom 69 completed the questionnaire in full. Two other subjects were eliminated because the time required was too short. The adjusted population is n=67. The evaluation is computer-aided using Excel. Frequencies were collected. The results are shown in graphics below and the most important findings are briefly explained.

A1: New way of semester planning, new space

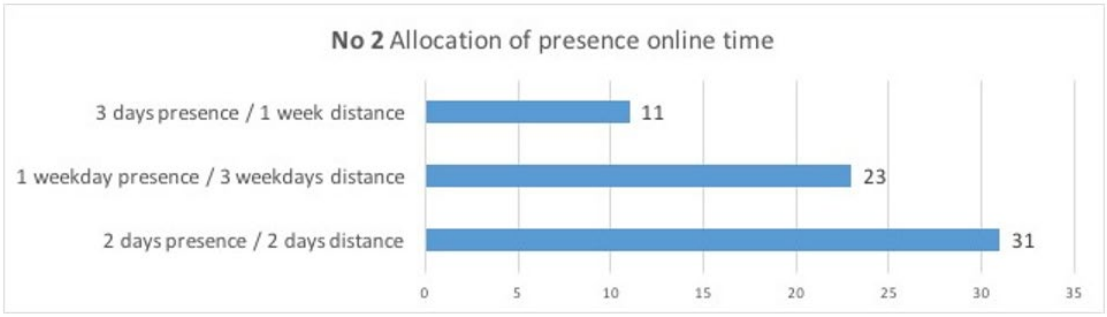

Fig. 1. Result Allocation of presence online time

Most students (31) prefer a balanced distribution of presence and distance lecture time and the least (11) request that more presence on campus is the better solution. Furthermore, a large portion (23) would welcome a higher weight on online courses with only a limited presence portion.

B2, B3: Room and Space

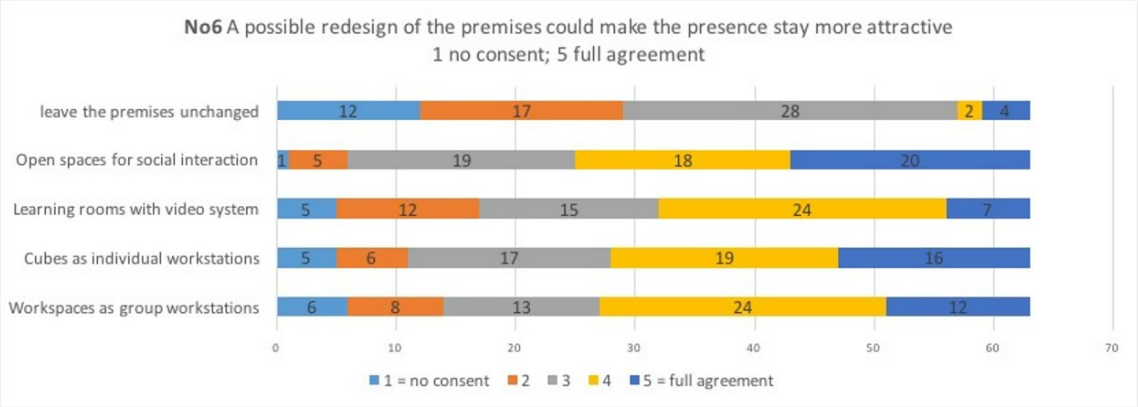

Fig. 2. Answers on possible redesigning of premisses

Many interesting findings are revealed, i.e. the largest group does not see a need to change the layout or the equipment of the rooms but at the same time most surveyed request rooms with a video conference system. Also, group workstations which support social interaction are on higher demand as single cubes.

C4: High-quality digitalized teaching that is excellent in terms of subject didactics

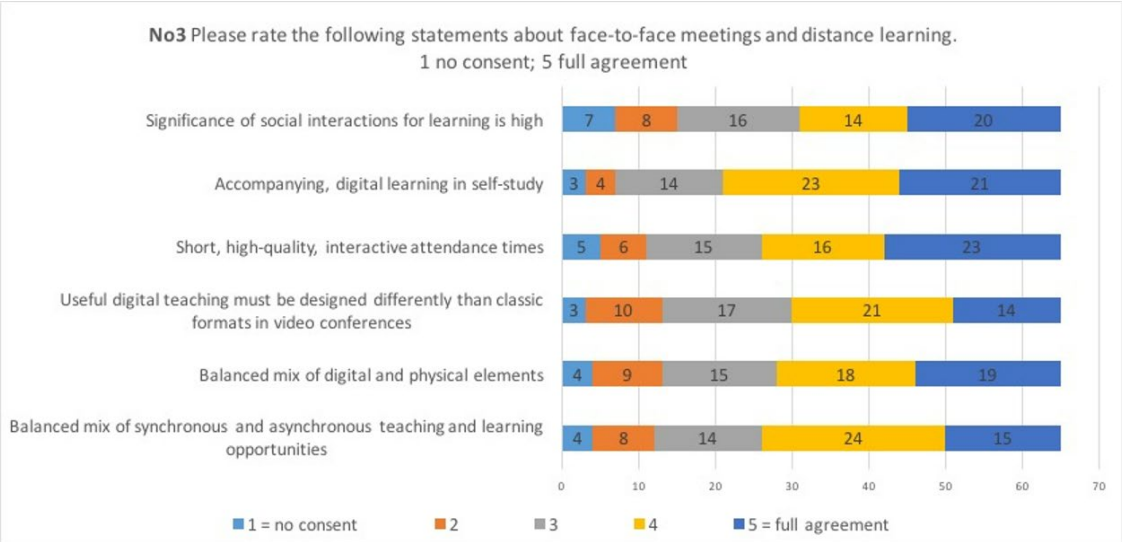

Fig. 3. Rating results on statements regarding presence and distance learning

The requirement of social interactions in presence classes is obvious and funnelled in the right mixed balance of physical and digital elements, as well as synchronous and asynchronous teaching offers.

C5, C6: mixed balance in teaching

Fig. 4. Opinions to offered block lessons on site

Face-to-face block lessons are not very popular, maximum one week in two blocks per semester could be considered by the students. The majority of students reject long block lesson periods.

D7: Self-learning skills, personal responsibility

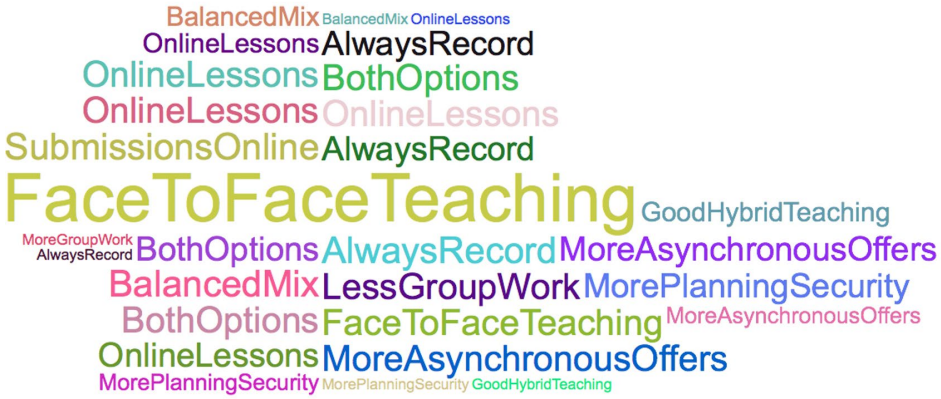

Fig. 5. Wordcloud of comments

Face to Face teaching is the strongest thought after requirement, linked to the fact above that currently much more distant learning is offered due to the pandemic. Still, online lessons play a big role in the requirements of students learning lives.

F8, F9: exams

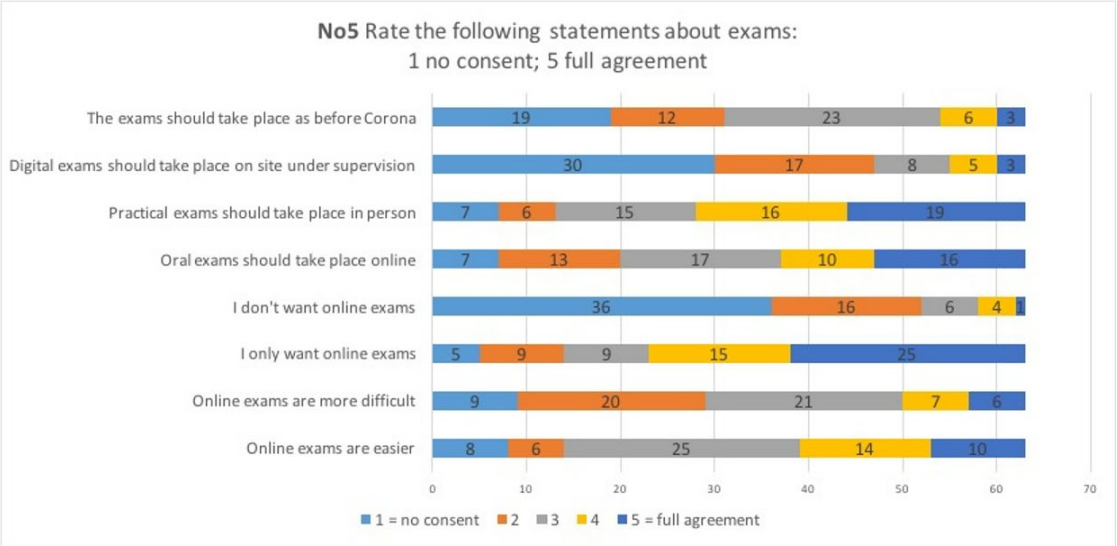

Fig. 6. Results regarding provided statements on examinations

Huge support for online examinations is noted, although at the same time many request examinations as in pre-pandemic times. Written and oral online examinations are demanded and not perceived as being easier than presence examinations.

3 Recommendations for action

In the following, recommendations for action on teaching and learning after the corona pandemic are given:

The answers to Q1 and Q2 clearly show that most students want more presence after the pandemic. However, a balanced mix of synchronous and asynchronous as well as interactive and self-study times is also required, provided that these are appropriate to the technical content. This results in a challenge for the semester planning:

Pure online and pure face-to-face days should be planned in a roughly 50:50 ratio. Block events should not be planned.

In this way, the journey time can be reduced by half, which ultimately also contributes to environmental protection.

It should not happen that students or teachers must rush to campus or home to attend an event. Lecturers usually have an office on campus. In the answers to Q6, students would like more study rooms with video systems and group workplaces. Contrary to this, many students also answer that the university premises should remain unchanged. Furthermore, there should be the possibility to hold an event on site at the same time and to stream and record it LIVE.

It is recommended to fully equip some of the lecture halls with digital technology for LIVE streaming and video recording. Furthermore, rooms

are to be converted into study rooms with a video conference system and group workstations are to be set up.

Students are almost unanimous when it comes to exams and reject a return to the pre-Corona exam formats, reject on-site digital exams and want more online exams.

The recommendation here is to make exam planning more flexible in the future. Online exams could create exam periods with less stressful peaks for students.

Nevertheless, it is clear that the legal framework for digital and online exams in some countries and at many universities still needs to be clarified.

Ultimately, the authors of the study left the impression that social relationships in the learning process (Arnold et al. 2018; Beer et al. 2003) are of existential importance and apply to e-learning, too. The active involvement of students in all formats stands or falls with the successful establishment of social relationships between the teaching staff and the learners. **Interaction time should be used significantly more for interaction and feedback, regardless of the medium used.**

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Learning to collaborate across borders: Insights from the X-Culture Project and the emergence of global virtual teams

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Abstract. Global Virtual Teams are being increasingly employed in organizations worldwide, a trend that has been strengthened by the COVID-19 pandemic and lockdowns. We present the X-Culture Project, a large-scale cross-border collaborative project designed to provide students with a first-hand experience of international collaboration through work in GVTs on an international business consulting project. We review the advantages and overall organization of this experiential learning-based project, as well as potential challenges - and best practices to minimize their impact on participants´ experience and satisfaction - associated with cultural, language, and time-zone differences, social loafing, plagiarism, peer-evaluation collusion, and cyberstalking.

Keywords: X-Culture Project, Global Virtual Teams, Cross-Cultural Collaboration.

1 Introduction

The COVID-19 pandemic and the subsequent lockdowns imposed in the majority of the countries is still having a huge impact on the way people behave and interact. Perhaps nowhere else was this impact felt as strongly as in the workplace. As social distancing was mandated and physical proximity discouraged, a growing number of companies shifted to remote work whenever possible.

Global Virtual Teams (GVTs), which were already widely used in many organizations pre-pandemic (up to 87% of all white-collar workers participated "at least sometimes" in GVTs (CultureWizards, 2018)), became an ubiquitous necessity prompted by the impossibility of co-location. Defined as "temporary, culturally diverse, geographically dispersed, and electronically communicating work group[s]" (Jarvenpaa and Leidner, 1998, p. 792), GVTs allow for the achievement of a common purpose by relying on information and communication technologies (ICTs) that permit interactions through interdependent tasks (Lipnack and Stamps, 1997). Among their many advantages, GVTs allow savings on the commute, the ability to hire talent globally regardless of the person's location, and most importantly, bring the diversity afforded by the international dispersion and access to a variety of professional networks, cultures, and knowledge silos (Taras et al., 2013; 2019; Jiménez et al., 2017).

Over the decades, the development and ubiquity of ICTs have significantly changed work structures and dynamics within organizations, leading to an

increasing use of GVTs (Webster and Wong, 2008; Jiménez et al., 2017). The current COVID-19 crisis is likely to further accelerate this process to benefit from the advantages of remote collaboration. Thus, GVTs allow circumventing geographic and time boundaries, reducing not only travelling time and costs, but also the cost of immigration or expatriation. Furthermore, due to the diversity of backgrounds, the diversity of the resources available to the team rises (van Knippenberg et al., 2004), and enhances the ability to solve problems (Taras et al., 2019). Online communication can also reduce conflict and social fragmentation in an intercultural context (Stahl et al., 2010), and even the team members' greater autonomy can lead to enhanced motivation and job satisfaction (Nurmi and Hinds, 2016).

However, GVTs also face challenges of increased coordination costs due to time-zone differences (Sutanto et al., 2011), communication barriers, social categorization, biases, and lower trust (Jarvenpaa and Leidner, 1998; Klitmøller et al., 2015). Together with the increasing stress as a consequence of the uncertainty that the current COVID-19 pandemic is triggering, working in a GVT is far from being simple and not something most employees can quickly adapt to.

Overall, the necessity to work and collaborate remotely, already important in the last decades, becomes vitally important during the current crisis, leading to a "master GVT, or perish" world. In contrast, despite some efforts in universities and business schools to include GVT training in their curricula to learn how to deal with these challenges (Taras et al., 2013), the majority of workers are not fully accustomed to it. In this chapter, we describe the X-Culture project, an international business competition where students work in GVTs, thereby experiencing the challenges and learning the best practices of international collaboration, as well as the potential challenges that instructors need to be aware of in order to extract the most benefits from this experience.

2 The X-Culture Project

The X-Culture project (www.X-Culture.org) is a large-scale cross-border collaborative project designed to provide students with a first-hand experience of international collaboration through work in GVTs on an international business consulting project. Launched in 2010, the project has grown exponentially over the years. Nowadays, every semester more than 6,000 students from around 170 universities in 40 countries on every continent participate in the project.

In a nutshell, students enrolled in the X-Culture project are randomly assigned to a GVT (typically seven students per team, all from different countries) and solve real-life challenges presented by real-life corporations that partner with the X-Culture project. Typically, the task requires to develop a new market expansion strategy, develop new economically viable products or product features for the client company, conduct opportunity analysis, and choose a market where the product is most likely to be successful, and/or write a new market entry plan that details the recommended market entry mode, staffing, and marketing strategies. The active phase lasts eight weeks, although with the pre-project preparations and

post-project presentations, it takes up most of the semester. The students also have live webinars with their client companies, where they have opportunities to ask questions about the task they are working on and share their ideas and receive feedback from their clients.

During this time, the students meet regularly and comply with intermediate deadlines. Instructors receive detailed weekly reports on the performance of each of their students, while students also receive weekly feedback, suggestions, and updates on how their teams are doing compared to other teams. While most of the organization of the project is centrally conducted, the role of instructors is critical as they communicate with their students regularly, provide coaching and guidance, and often spend a few minutes of each lecture discussing student progress and answering questions. At the end of the project, the teams submit their consulting reports, which are <

3 Challenges and best practices

Despite the multiple advantages previously mentioned, participating in the X-Culture project is not free of challenges. While our aim is not to provide a comprehensive list of all the potential problems that may arise during the project, we describe five sources of problems that are often observed as well as some tips to minimize their impact on the students´ experience and satisfaction.

First, a common and probably expected set of problems stems from team members' differences, including cultural diversity, language issues, and time zone dispersion. Importantly, experiencing the challenges of differences is one of the key goals of the project. These are the challenges faced by all GVTs, and thus learning how to deal with them allows students to acquire the necessary skills for international collaboration that they surely need later in their careers. To help students cope with the challenges stemming from diversity, the project provides pre-project training materials and regular webinars during the time the teams collaborate with the objective of increasing cultural awareness and tolerance. Yet, the role of instructors is critical in mediating and solving issues when they arise. Besides, and despite English being the working language, the majority of participants are not native English speakers. This leads to situations in which some students feel uncomfortable or unable to properly communicate with their teammates. Once again, the role of instructors here is critical in encouraging students not to be shy and express their ideas. Similarly, instructors of native English speakers need to help their students understand and empathize with their team members from non-English speaking countries, use plain language, and facilitate discussions and knowledge sharing.

Finally, another source of challenges stems from the time zones differences that are inevitable when team members are dispersed across continents. While sometimes synchronous meetings are convenient or even needed, deciding the most appropriate time requires the proper organization as well as understanding among the members (to prevent situations in which teams decide to meet regularly at a very inconvenient time for one of their members), training on asynchronous

communication is essential and pre-training materials include some tips about various platforms and online communication tools.

The second source of challenges that instructors need to be aware is related to social loafing (aka free-riding, freeloading, or shirking). As the GVTs rely on collaboration among members, it is often frustrating when a student signs up for the project but puts in a limited effort or does not collaborate with the rest of the team. To weed out the potential freeloaders, instructors and students are required to review X-Culture training materials and take a readiness test prior to the project's start. Some students seem to lack motivation or self-discipline to devote the necessary time to the test, which probably means neither will they have time for team meetings and research and writing required by the project. Still, a small but still noticeable percent of students pass the readiness test, yet work on the project only half-heartedly. Admittedly, often this happens for causes beyond the student´s control, such as personal circumstances, busy schedule, or sickness that prevent students from being able to dedicate the necessary time to the project.

When freeloading happens in the earlier stages of the project, the team member is usually substituted. However, if it happens late, the option often is for the teams to continue and finish their project, relying on the remaining active team members. The biggest problem, though, is usually related to students who do not work as hard as the rest of the team or provide reasons (sometimes legitimate) why they were unable to do what they originally planned to do. Although considering the number of students involved in the project, it is inevitable that a share of students will simply not do their share of work, it is critical that instructors motivate students to actively participate in the project. Also, it is highly recommended to keep a copy of the emails sent to their teammates or other records that show their efforts in case of disputes. Unfortunately, there is no perfect solution that fits all cases, but usually, instructors mediate in case of conflict, and peer evaluations are used to reflect the level of involvement of each student. In any case, this challenge is only a reflection of the accurate representation of reality that the project provides to students, as this is a problem that professionals also face when working in teams.

The third source of potential problems may arise from plagiarism issues. To minimize this possibility, the reports are scanned using plagiarism-detection software. Yet, and despite this being known by participants from the very beginning, it is important that instructors raise awareness and train students accordingly. Sometimes plagiarism issues are linked to cross-cultural or institutional differences, as what is understood as plagiarism is not the same way universally, as well as to English skills, as students with lower English fluency find it harder to rephrase literal quotations.

The fourth source of challenges stems from occasional peer evaluation collusion where team members agree to give each other perfect peer appraisals, thinking that this will make them look good and not realizing that such practice makes it impossible to detect problems when they arise and provide help, as well as provide fair grades/marks at the end of the semester. Although such collusions are usually difficult to detect unless one of the participants raises the alarm, this problem has not been frequent, perhaps because each instructor can decide how they want to

use peer evaluations to mark their students. The recommendation is not to take them into consideration, but not as the main component of the final grade. Furthermore, it could be advisable to drop the lowest and the highest peer evaluation grade. Finally, to encourage students to evaluate their peers in an objective way and reduce any potential bias in this sense, individual peer evaluations can be kept secret, with students only able to see the average score.

The fifth source of challenges observed in team-based international student projects is cyberstalking. Its occurrence is extremely rare, but it happens something, and when it does, it could lead to some confusion and conflicts caused by differences in cultural protocols and traditions related to informal communication. When young people come together, as is the case in collaborative student projects, it often happens that one student takes a romantic interest in another. In most cases, students continue focusing on the task, remain professional, and make no romantic advances. However, naturally, some try to flirt, and strictly speaking, there is nothing inherently wrong with young people flirting with one another. However, due to the international nature of GVTs, the protocols and traditions related to such encounters could vary drastically for different cultures represented on the team. In some cultures, such as those in the U.S. or Japan, romantic encounters on the job are considered inappropriate, and the work team members are encouraged or even required to keep their personal matters out of the workplace. Any signs of romantic advances could be perceived as unprofessional in the workplace context, and many organizations may even have policies for punishment for such instances. Other cultures might allow more flexibility when it comes to personal matters in the workplace context, as is the case in some Latin American or African countries.

These differences in workplace protocols and traditions could create certain misunderstandings and even serious conflicts. Occasionally, we see cases when one student complains about excessive signs of affection, such as one student "liking" every photo on Instagram and Facebook of another student, sending repeated personal messages, and engaging in other forms of courting. We have never seen cases of actual sexual harassment, but there have been cases of excessive attention bordering on cyberstalking by the standards of the plaintiff's culture. Notably, when we reach out to the student accused of displaying unwanted attention and the student's professor, as we always do when we receive these sorts of complaints, we are met with genuine puzzlement and confusion. Not only the student in question, but also the student's professor, acknowledge the issue and promise to stop the unwanted behavior, but also note that they do not quite understand what is wrong. As they typically explain the issue: one student likes another and tries to show this interest and perhaps start a romantic relationship – what is wrong with young people falling in love? In private follow-up conversations, one party often complains and expresses frustration about the very restrictive rules when it comes to emotional involvement and romantic encounters in the workplace, which clearly seems wrong according to the traditions in their own culture.

Resolving these issues often requires extra sensitivity and care. It is usually clear from the onset that all parties act in good faith, and nobody means harm. If anything, the accused party is trying to be very nice and courteous, it is just by the standards of the other party, such niceness and courtesy are considered inappropriate. So, conflict resolution must be very careful to ensure a comfortable workplace for everyone, a productive team, while avoiding unnecessary offending either party.

Despite the aforementioned challenges, the majority of participants, both students and instructors, consider that the advantages of the project largely exceed the challenges. We, therefore, hope participation in this project increases even further, especially for students whose circumstances make it not possible to enjoy cultural immersion and encourage interested instructors to give it a try!

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Web based higher education: The international and interdisciplinary Master Program of Web Science

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Abstract: The five-semester Master's program Web Science of the Cologne University of Applied Sciences (TH Köln) is designed to be studied parallel to professional activities all over the world. The international students are professionals who have already graduated from a related program and have professional experience in a web-related field. The Master's program enables them to expand and deepen their knowledge in order to hold leadership positions, for example as CIOs or project managers. The Master's program (M.Sc.) follows an interdisciplinary approach.

Keywords: international studies, web science, interdisciplinary.

1 Internationalisation, the Global Web & Web Science

1.1 Economic, political and social internationalisation

Since at least the last three decades globalisation resp. internationalisation has been playing a crucial role for the **economic**, **political** and **social** sphere in the world, especially in Europe. Production, trading, services are not thinkable without international influences. The same is true for european organisations and institutions like administrations, governments and associations - regardless of their size and orientation (profit-oriented or non profit-oriented).

The european **economic** process can be observed in two directions. On the one hand, more and more european enterprises expand their activities to foreign countries outside of Europe - especially with focus on Asia. On the other hand, asian companies enter the european markets with a great visibility and success.

The **political** process in Europe is characterized the last six decades - since the treaty from Rome (1960) - by a deepened european integration – from the customed union onto the EU internal market until the european currency union. The importance of the unitary of 28 european countries can be seen in competing against other global power blocks like the U.S. and China and also in standing together against felonious aggressions like the russian war against the Ukraine.

The **social** processes in modern societies are shaped by increasing international interaction. Web-Based information and communication technologies, cooperation systems and networks have rapidly developed over the last decades and connect today billions of users – with enormous sociocultural impacts.

1.2 The Global Web

The internationalisation is based on and putted forward by the rise and growth of the **global web**. The global web is not restricted just by the internet but comprises also the intranet, new information and communication technologies, cooperation systems, online communities and networks etc.

The global web has rapidly developed over the last decades and connects today billions of users. Many people nowadays routinely use the computer and cooperation systems in their daily work routine, such as e-mail, shared workspaces, chats, social networks and video conferences.

The intended use of the global web is becoming more and more blurred. On the one hand, professional systems like shared calendar and document sharing are becoming part of private life due to its falling prices and growing ease of use. On the other hand, leisure systems like chats and social networks find their way into professional business life because people are getting used to. We can't assume that the global web is mainly for the private use or the professional application. It is everywhere and ubiquitous as for example the wide use of navigation systems and location based services shows.

1.3 What is Web Science?

The term "Web Science" was coined by Tim Berners Lee at the beginning of this millennium. It refers to the necessity of a paradigm change from "Computer Science" to a more interdisciplinary approach and of focusing on the possibilities of the "Web" as the interconnection of people, services and systems.

The term "Web" nowadays refers to the interconnection of people, services and systems (e.g. technical, economical, social, cultural). "Web Science" deals with phenomena in and of the Web and uses knowledge, concepts and methods from corresponding disciplines and perspectives (informatics, economics, business administration, law, design, social sciences etc.).

As a result, Web Scientists manage web projects and are capable of embracing a holistic, out of the box perspective on web phenomena.

2 The Master Program of Web Science

2.1 Basic idea: International and interdisciplinary perspective

If higher education has the objective to understand and develop existing institutions and create new ones it has to focus on international issues. For a competent and responsible citizen, it has also to thematize the global web. Both the international perspective and the web theme is focused in the **Master** Program (M.Sc.) of **Web Science** from the University of Applied Science Cologne (Technische Hochschule Köln).

The Master's program Web Science follows an **interdisciplinary** approach: Apart from imparting fundamental knowledge about web architecture and concepts, the program's focus is placed on a myriad of aspects, such as strategic management and web-based marketing, design as well as cultural and security issues. In

addition, students acquire knowledge in the fields of project management, leadership, consultation, analysis, coordination of web application systems, conception of internet system architecture and quality assurance.

This interdisciplinary orientation of Web Science reflects the **paradigm shift** from **technology-centered** view of informatics („Computer Science") of the 1990's to an **interdisciplinary** science of the Web as **internet-based interconnections** today. The interconnections exist between humans (e.g. social networks), information (e.g. Internet of Things) and services (e.g. Mass Customization).

To understand the basic idea of the interdisciplinary approach of Web Science it is senseful to regard the three phases of the web.

1. The early internet: **technological** driven (until beginning/midst of the 2000's)
2. The middle-aged internet: **social** and **data** driven (until beginning/midst the 2010's)
3. The modern web: **interdisciplinary** (from beginning/midst the 2010's)

1. The early web until the beginning/midst of 2000's was seen mostly technical. The focus of the scientific attention was on analyses of **search engine technologies** and the infrastructure for sharing data. The internet was used for public agora resp. distributed systems for sharing documents, images and other. Value arised mainly by hyperlinks connecting the pages and linkings help to search for and find the most valuable resources. Except for the music industry which traditional business model was successfully attacked by streaming concepts (e.g. Napster), there were not really economic disruptions. The missing disruptive character of the earlier internet was proved by the burst of the Dot-com Bubble at the beginning of the millenium.

2. The following decade, the web has become a personalized and social information space. The founding and rising of the **social networks** started (Facebook 2004, YouTube 2005, Twitter 2006, Instagram 2010). The focus moved from technological to more interactive issues: Clicks, likes, friends, follower stood in the focus of scientific and practical investigations. Social Media Management has turned onto a crucial economic application where data is the new oil of modern business.

3. But the web didn't stop ever since and is still developing. The modern web has become ubiquitous and disrupted the economic, technological and sociocultural world as we knew it before. The **Platform Economy** changes the markets forever. New interactive value is increasing by new concepts like the **Sharing Economy**. Machine driven applications open up the new world of the **Internet of Things**. Items like watches, cars, homes, cities become smart. The applications for **Artificial Intelligence** seem to be endless: AI-based Knowledge Management, Process Automation, Virtual Agents, Cognitive Robotics, Autonom Systems and Speech Analytics to name a few.

All these web related megatrends have massive economic, technological, ecologic, legal, psychologic and sociocultural impacts. The **multi-faceted** and **diverse**

development of the web suggests that for an analysis and understanding of the global web it is not sufficient to focus only on one viewpoint.

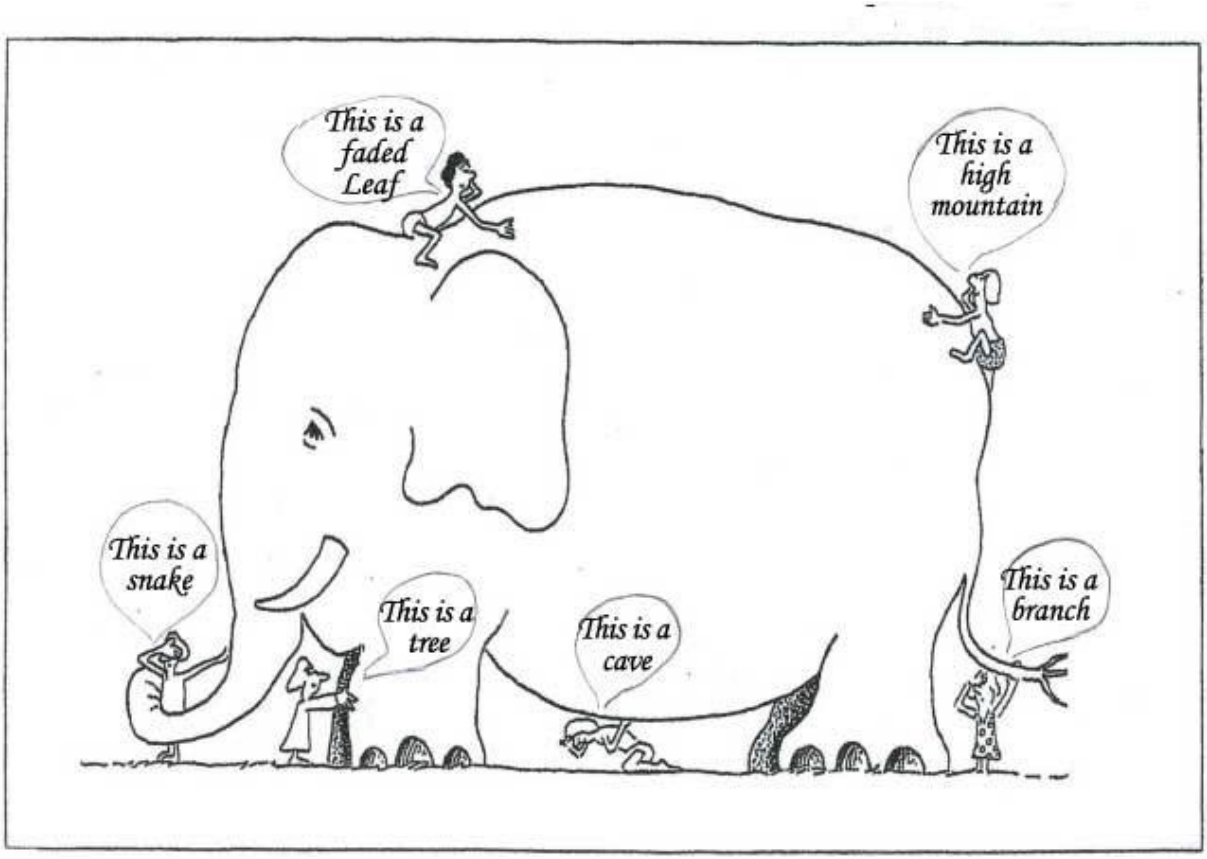

Fig.1. Six blind men describe an elephant (old Indian fable). Source: https://xebia.com/uk/blog/preparing-for-agile-maintenance-knowledge-management/

It is like in the old indian fable. A group of blind men try to imagine what the elephant is like by touching it. Each blind man feels a different part of the elephant's body. They describe the elephant based on their limited experience and their descriptions of the elephant are different from each other.

The same is true for the web. To analyse the web from a scientific perspective it is not sufficient to focus just on one viewpoint. In fact, there are different sciences having significant contributions for the understanding of the web. An interdisciplinary approach of colliding sciences is needed to comprehend and analyse the complexity and variety of the global web. This is what the master Program of Web Science is about.

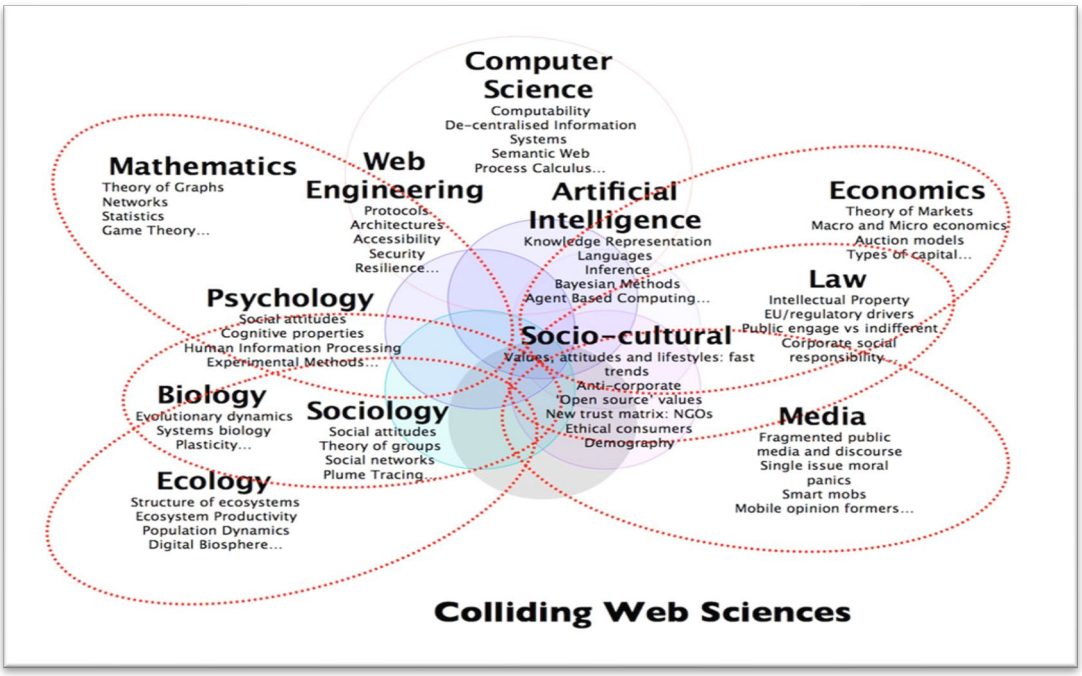

Fig.2. Colliding Web Sciences. Source: C. Hooper, A. Dix (2012): Web science and human-computer interaction: when disciplines collide, in: WebSci '12: Proceedings of the 4th Annual ACM Web Science Conference, New York.

2.2 Objectives and organization

The Master's program Web Science is offered parallel to professional employment and covers all important aspects which are relevant to decision-makers in web-related fields. The Master's program provides an opportunity to expand and deepen their knowledge in order to hold leadership positions.

Potential fields of **employment** for graduates of the Master's program Web Science include consultation, communication and executive responsibilities in service, application and information departments of enterprises, authorities or institutions. Future employers are primarily industrial and service enterprises, e-commerce businesses, social network companies, online advertising agencies, hardware and software developers, consulting firms and public authorities.

Crucial for Web Science is that the participants, despite their own educational and professional background, develop a common basic vocabulary and understanding of the web science discipline. The students get to know the relevant issues and perspectives of the discipline Web Science, own the capability to interrelate and to apply them on current domain problems and to develop solutions. They will be able to competently contribute to a scientific discourse and critically analyse the adequacy of these concepts and methods for applications in the web.

As described above Web Science follows an interdisciplinary approach: Apart from imparting fundamental knowledge about web architecture and concepts, the program's focus is placed on a myriad of aspects, such as strategy and marketing, design as well as legal and security issues. In addition, students acquire knowledge in the fields of project management, leadership, consultation, analysis,

coordination of web application systems, conception of internet system architecture and quality assurance. Students should embrace the multiperspectivity of Web Science.

The Master's program in Web Science is taught **entirely in English** and combines online courses with few on-site weekends and self-study components. The online sessions are conducted via the online collaboration tools like Zoom, freely available during the studies. The tools allow online lectures as well as group work in breakout rooms. Teaching methods include seminar and project based learning, case-studies and online teams.

In the Web sphere is still a strong necessity to deal with many differences in culture, working style, ethics etc. which have to be taken into consideration in spite of web usage and increasing worldwide communication. Online communication can even increase the difficulties to consider cultural differences because it is e.g. difficult to express gestures, facial expressions and emotions by digital communication. This is why a special focus of Web Science are intercultural teams in which the students are sensitized for intercultural aspects in teamwork. While learning about major aspects of different cultural regions and distinctions of intercultural communication they might improve understanding and behavior in critical intercultural situations.

3 Curriculum: Modules and referring courses

3.1 Module: Web elements

The module „Web Elements" consists of the courses **Introduction to Web Science**, **Web Architectures**, **Human-Computer Interaction** and **Visualisation**.

The module deals with different architectural patterns of web-based systems, the interrelations of contributing modules, components and protocols. After having absolved this module the students will be able to analyze and discuss web applications from an architectural perspective. They should perceive openness and decentralization as key properties of the web, understand the impact of fundamental principles of resources, interaction, and identification, understand the role of architecture and architectural patterns for the analysis and evolution of web applications, and are able to identify and discuss the role of information modeling in the web in contrast to more traditional data (base system) centric approaches.

In this module application classes like peer-to-peer applications, synchronously or asynchronously interacting applications and services are distinguished and discussed based on their architectural patterns, protocols and typical uses. The primary needs for the quality management of web-based systems are identified. The students get to know existing approaches, concepts and methods for (software) quality and quality management and will be able to discuss their similarities and differences, know established techniques of quality planning, quality assurance, quality control, and quality optimization on organizational, project, and development phase scale and are able to judge them critically in terms

of business, risk, and other kinds of objectives, and are able to derive appropriate requirements for quality management systems from high-level (e.g. business) objectives.

3.2 Module: Digital strategy and business

The module „Digital Strategy and Business" consists of the courses **Web- Based-Marketing**, **E-Entrepreneurship**, **Lean Product Development** and a choice between **Strategic Management** and/or **Web Megatrends & Business Models**.

In this module the students receive an insight about the economic perspective of the web. Absolving the module, the students learn about the essential strategic and operational decision fields of importance in the area of marketing products and services through the web. This refers to strategic decisions affecting customers, competitors and sales partners. The students obtain a broad perspective on the possible strategy options in web context and on the economic models that support the selection of strategic options as well as on practical possibilities to encircle attractive target groups. They should also understand crucial economic data for strategies like revenues, profits, market shares, and understand the meaning of strategic alliances for managing future tasks.

3.3 Module: Web trust and security

The module „Web Trust and Security" consists of the two courses **Web Trust** and **Web Security***.* Furthermore, there is a related **project** to pass.

In this module the participants achieve good knowledge about the most important aspects allowing and involving "secure" web-based communication in a comprehensive view. This covers the so called classical topics concerning IT security (e. g. assurance of confidentiality or privacy, of integrity and of availability in respect of certain protection targets) in a way focused on the web. Furtheron specific questions on authenticity and originality of web contents and identities have to be answered. Special notice – because of the strongly increasing usage of mobile web access – has to be attracted to mobile environments and their specific implications on security aspects.

In this module the students learn to systematically analyse scenarios in respect of their relevant security aspects in a comprehensive way. The development of concepts for those scenarios is also part of the methodology. This covers the systematic itself as well as its application, in general and in the special web context. Basis is the IT baseline protection and derived methods. Important competences in this regard are the ability to analyse systems in view of security vulnerabilities, the knowledge of reasons for security weaknesses, the critically challenge of conclusions concerning security and training of analytical skills based on concrete use cases.

3.4 Module: Decision & Management

The module „Decision & Management" consists of the two courses **Organizational Behavior** and **Open Innovation***.* Furthermore, there is a **project** to absolve. In this project different web related ‚Decision and Management'-themes like leading

modern teams (e.g. agile, virtual, intercultural, cosmopolitan, remote teams); Cloud Computing; Big Data; knowledge work; collaborative leadership; digital platform concepts and businesses are discussed.

In the other two courses of the module the students will develop a basic understanding for crucial aspects of organizational behavior theory, network theory, and communication theory to demonstrate best practices in organizational leadership. They will be able to identify different organizational options and assess their risks and chances.

Crucial ideas, impacts and effects of web megatrends like Cloud Computing, Agile IT and Big Data on organizations, enterprises and teams are discussed. The students get an integrated knowledge of modern innovative systems like Open Innovation. Strategic benefits and risks of strategic networks, virtual organizations and collaborative systems of work are analysed. The modern approach of transaction theory is explained. The students should be able to apply the approaches of new institutional economics on modern organizational questions. This includes an evaluation of the critical success factors for decision and management in concrete implementations.

3.5 Module: Web & Cooperation

The module „Web & Cooperation" consists of the two courses **Intercultural Teams** and **Cooperation Systems***.* Furthermore, there is a **project** to absolve.

Attending the courses of this module, the students learn to provide and discuss conceptual designs, analysis and evaluations of web applications as socio-technical systems. The essential concepts and methods of „Computer Supported Collaborative Work" (CSCW) are presented and discussed.

The students get to know essential concepts and methods of „Social Networks Theory and Architecture". After absolving the module they are able to competently contribute to a scientific discourse, critically analyzing the mutual influence of social networks and structures, processes, and strategies of enterprises.

A special focus is on the intercultural perspective. After attending the course „Intercultural Teams" students should have an understanding of important terms and expression in the field of international and intercultural business communication, know about classical studies and concepts as well as recent empirical studies on intercultural communication and detect important elements of intercultural communication with special focus on online communication.

3.6 Module: Design

The module „Design" consists of the two courses **Design Thinking**, **Design Thinking in Management** and a **design-related project**.

In this module the students learn the relevant design disciplines in context of the web. They get familiar with their perspectives, tasks and approaches. They learn to know major terms and rules of different disciplines and are able to identify problems, tasks and challenges concerning design.

After attending the Design module the students will be able to analyze, argue, discuss and evaluate design concepts and variants. They know fundamentals on visual perception and they are able to decode and describe different visual contexts. They are able to define and to identify design objectives, and to put them into relationship with web-based systems.

After absolving this module the students know how to measure the quality of concepts, layout, interaction and design. They are able to manage the creation of new concepts, designs or design adaptions as well as keeping that process in line with the given design objectives and the existing design context. They are aware of the consequences that prospective design related decisions have on internal and external appreciation of corporate-, brand- or product-identity. They are also able to put single design measures into context with broader objectives and their economical effects.

3.7 Module: Web & Society

The module „Web & Society" consists of the courses **Privacy**, **Risks and Opportunities of Social Media Data, Computer Ethics** and **Digitalization and Sustainability**.

In this module the students get to know aspects of social structures, practices and institutions. Related concepts focus society, culture, sustainability, socialisation, social groups, norm and deviation, ageing, race and ethnicity, gender, stratification, global poverty/global inequality, family, health and medicine, politics, education, collective behavior, social movements, demography etc. Questions like: How can digitalization be utilized in various application domains to achieve sustainability goals?, are discussed.

After absolving the module the students are able to explain the notion and meaning of privacy, to outline, what a right to privacy protects, to identify the conflicts between privacy, other human rights and interests, to understand how privacy is protected in Europe. They also know the notion of transparency as well as open data and know their advantages as well as legal implications of it.

3.8 Module: Web Project Development

The module „Web Project Development" consists of the courses **Advanced Seminar**, **Requirements Management**, **Risk Management** and a related **project**.

After attending this module the students know the challenges of the management of projects for the web. In the context of specific projects, they will able to apply and critically discuss methods for the management of stakeholders, quality, time, cost, and risk. The students get familiar with challenges and methods to research, judge and communicate quality information from traditional academic sources as well as novel academic communication forms in the Web. The students will be able to identify and develop novel applications for the web and analyse and discuss them in terms of their feasibility, and their commercial and strategic opportunities.

In the following illustration you can see an overview of the modules and the referring courses.

Table 3. Overview of the modules and the referring courses.

Module	Module CP	Course	Course CP
FP: Web Elements	12	Introduction to Web Science	3
		Web Architectures	3
		Visualisation	3
		HCI Basics	3
Design	12	Design Thinking	3
		Design Thinking for Practical Decision Making	3
		Design Project	6
FP: Digital Strategy & Business	12	eEntrepreneurship	3
		Strategic Management *(optional)*	3
		Web-based Marketing	3
		Lean Product Development	3
		Web Megatrends & Business Models *(optional)*	3
Web & Society	12	Privacy	3
		Computer Ethics	3
		Digitalization and Sustainability	3
		Risks & Opportunities of Social Media Data	3
Web & Cooperation	12	Intercultural Teams	3
		Cooperation Systems	3
		WC Project	6
Web Trust & Security	12	Web Security	3
		Web Trust	3
		WTS Project	6
Web Project Development	12	Web Project Management	3
		Risks Management	3
		Requirements Management	3
		Advanced Seminar	3
Decision & Management	12	Organizational Behavior	3
		Open Innovation	3
		Decision & Management Project	6
Masterthesis + Colloquium	24		24

13

DR. DEREK MATSUDA

Dr. Derek Matsuda *is a lecturer at the Center for International Education and the Institute for Global Leadership at Ochanomizu University. His research interests include multicultural education, cross-cultural understanding, immigrant roots and routes, and intercultural education. He has studied these themes since his undergraduate years and has written theses on relevant topics such as the educational problems that confront Peruvian immigrant parents and the way Japanese society responds to their problems. He is currently engaged in a project entitled "A New Educational Support from the Situation of the Acculturation of the Non-Japanese Children in Japan" (Grant-in-Aid for Early-Career Scientists <KAKENHI>, JSPS, 2019–2022), which intends to develop a supportive educational system in Japan for children from cross-cultural and cross-national backgrounds.*

COIL for fostering an intercultural mindset

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Abstract. COVID-19 brought many challenges to international education. One of them was the suspension of study abroad programs. In a country such as Japan, going abroad is one of the few ways to acquire a intercultural mindset since it is hard to find an international or a global environment. Therefore, universities in Japan enhance students to go abroad not only to learn the language and deepen their studies but to experience a different environment and foster their intercultural mindset to be more flexible and prepared for unexpected situations. During the pandemic, since the study abroad programs were intermitted, universities started to find an alternative way to foster the intercultural mindset of their students. Not only in Japan but in many parts of the world, universities offer online classes for short-term programs to learn languages and interact with students in other parts of the globe. Collaborative Online International Learning (COIL) is not an alternative educational method that was taken for the pandemic, but it is an educational method that was developed in the United States, and several universities started practicing this method for more than 15 years.

In this chapter, an example of a Japanese university applying COIL as a method of cultivating an intercultural mindset through international collaboration is presented. An analysis of the reports submitted by the students has been done in order to understand how the students are fostering their intercultural mindset through the joint classes with universities abroad.

Keywords: COIL, jont classes, intercultural mindset.

1 Education for fostering "Global Human Resources" in Japan

In 2010, MEXT (Ministry of Education, Culture, Sports, Science, and Technology-Japan) described the definition of "Global Human Resources" in the "Global Human Resources Development Committee, Industry-Academia Human Resources Development Partnership." It is as follows:

In an increasingly globalized world, to think independently, convey one's ideas clearly to colleagues, business partners, customers, etc., who come from diverse backgrounds, and understand the differences in values and characteristics that stem from cultural and historical experiences.

"In an increasingly globalized world, human resources who can think independently, communicate their ideas to colleagues, business partners, customers, etc. with diverse backgrounds in an easy-to-understand manner, overcome differences in values and characteristics derived from cultural and historical backgrounds, understand each other from the perspective of the other, draw out and utilize their strengths from such differences, and create synergy to generate new value."

2 Global Human Resources Development Committee, Industry-Academia Human Resources Development Partnership, April 2010

In 2011, MEXT clarified the elements that are expected to have as a "Global Human Resources" as follows:

The concept of "global human resources" is generally organized into the following elements:

- Element I: Language and communication skills
- Element II: Initiative, positivity, challenging spirit, cooperativeness, flexibility, sense of responsibility, and sense of mission
- Element III: Understanding other cultures and Japanese identity

In addition, a wide range of education and deep expertise, problem-solving ability, teamwork, and the ability to bring together a heterogeneous group of people is also important.

The following is a rough indication of the ability level of global human resources by stage (from elementary to advanced):

(1) Conversational level for overseas travel.

(2) Conversational level for daily life.

(3) Documentation and conversational level for work-related matters

(4) Bilateral negotiation and conversation.

(5) Bilateral negotiation/negotiation level.

(6) Multilateral negotiation/negotiation level.

3 Interim Summary of the Council for the Promotion of Global Human Resource Development (June 2011)

As mentioned above, the Japanese need competitive human resources in a global environment. In Japan, the language ability that is more tested and recognized is English. Therefore, English ability is used as a rough indication to test communication skills. However, in many countries, Japanese people's English ability is not so developed compared to other countries. According to the TOEFL iBT report, Japan is ranked 147th out of 171 countries, and this result shows how low the average scores of people who took TOEFL iBT are in Japan. It is not only shown by exams, but through many surveys, it is clear that Japanese people are not confident in their English skills even though they have been studying it for more than six years at secondary schools and four years at the university (Sato, 2020). In addition, it is not only a simply low English ability, but it has to do with the difference between Japanese and English as a language that English is difficult to acquire for Japanese native speakers. According to Chiswick and Miller (2004), the "linguistic distance" between English and Americans as being greater the lower the proficiency (score) after studying a foreign language for a certain period of time, and that immigrants whose native language is a language with a large

interlingual distance have a relatively low probability of acquiring sufficient English proficiency. In their paper, Japanese is listed as a language with a large interlinguistic distance from English, along with Korean, Chinese, Arabic, and other languages.

In addition, Japan is a country composed of many islands where the only language spoken is Japanese, and there is no need to speak English at all. Therefore, since the necessity of the usage of English is low, people do not have a high motivation to learn it. However, the situation in the business world is different. Terasawa (2011) points out that in the case of white-collar workers, the disparity in wages based on English proficiency is mainly related to workers in large cities and may be a particularly pronounced phenomenon among women. Furthermore, Terasawa (2011) also points out that the effect of English proficiency on wage levels is seen only in a small number of industries, such as "finance and insurance" and "broadcasting, publishing, and advertising," and that for many workers the relationship between the two is likely to be pseudo-correlated by educational background and other factors.

Nowadays, Global Human Resources are expected to be working in diverse fields, using their English ability and intercultural Mindset not only toward other countries. However, Japan is facing a serious population decline, and the government is now trying to welcome a foreign workforce to cover the shortage of human resources in which are not only "finance and insurance" or "broadcasting, publishing, advertising,"", but sectors including construction, agriculture, food manufacture and so on. Sectors are so-called blue-collar jobs. Therefore, an intercultural mindset and the ability to work with other languages is needed more than ever, and if the Japanese work do not improve their intercultural abilities, fewer foreign people will come to Japan to fill those jobs that need more human resources.

In order to respond to the economic industry and to develop people's intercultural mindset, the education at primary and secondary school have been transformed and has been implemented more than ever. The Japanese government has embarked on what is said to be the largest educational transformation at the postwar era. This is what is known as the 2020 Education Reform. Specifically, the curriculum has been substantially revised for the first time in about 10 years, in major changes in school education. The scope of instruction under the new curriculum covers elementary, junior high, and senior high schools. Since the purpose of creating the new curriculum was to ensure the public's right to a uniform standard of education, they were applied to all schools in Japan, regardless of whether they were national, public, or private. Within the 2020 educational reforms, a drastic reform of English education was also made. This is because a major objective of the education reform is to nurture human resources who will be able to play an active role in the future in the rapidly advancing global society. To achieve this goal, it is essential to master English, which is practically the world's lingua franca. The educational reform has greatly expanded, strengthened, and upgraded English education. With the previous revisions, there may have been no problem in considering necessary learning support, such as childcare facilities and cram schools, after seeing how children receive education. However, the 2020

education reform is such a drastic change that proactive measures need to be taken in advance. The new curriculum guidelines will be implemented in stages of education, one after the other. Elementary schools were fully implemented from 2020, junior high schools from 2021, and in schools from 2022. Some elementary schools already adopted the new curriculum guidelines since 2018.

4 Intercultural mindset as a 21st century skill

21st Century Skills, as advocated by the international organization "ATC21s" (21st Century Skills Effectiveness Measurement Project), are the abilities necessary to survive in the global society of the 21st century and beyond. Specifically, they include critical thinking, problem-solving, communication, collaboration, and information literacy, and are advocated as skills that young people should acquire to support the next society. The 21st century skills outlined by the ATC21s include a total of 10 skills divided into the following four categories:

1 Ways of Thinking

(i) Creativity and innovation

(ii) Critical thinking, problem solving, decision making

(iii) Learning to learn, metacognition (knowledge of cognitive processes)

2 Ways of Working

(iv) Communication

(v) Collaboration (teamwork)

3 Tools for Working (Tools for Working)

(vi) Information Literacy

(vii) Information and Communication Technology Literacy (ICT Literacy)

4 Skills for Living in the World (Skills for Living in the World)

(viii) Citizenship in the local and international community

(ix) Life and career

(x) Personal and social responsibility (including intercultural understanding and adaptability to other cultures)

Many 21st century skills fall into the category of so-called "soft skills". Soft skills are mainly atypical skills related to interpersonal relationships, such as communication, negotiation, creativity, analysis, problem solving, leadership, management, and flexibility. Science and technology, including ICT, are making tremendous progress, and new businesses are emerging all over the world. As a result, the number of types of work has increased, specialized areas have been subdivided, and the system of work has become more and more complex. At the same time, added value is being demanded of each job. In order to respond to this trend, it is necessary to strengthen soft skills. Hard skills, on the other hand, include systematic knowledge of theories and methods, various qualifications,

degrees, etc., and are characterized by being formulaic and easy to visualize. In order to perform any task, a commensurate level of hard skills is essential. However, in many cases, soft skills are required to achieve higher efficiency and results in increasingly sophisticated and complex businesses. For example, in the case of business negotiations that require a high level of expertise, negotiators need to have not only advanced technical knowledge but also presentation and negotiation skills, which may determine the success of the negotiations. In addition, in order to devise business that has never been done before and create new value, the negotiator will need not only knowledge but also analytical skills, flexibility, and problem-solving ability.

Both hard skills and soft skills are necessary for performing one's job, but the former is so-called "formal knowledge" and can often be acquired by self-study using manuals and textbooks. The latter, however, are so-called "experiential knowledge," and are developed through one's own experiences, especially through interactions with others. Its acquisition is more difficult in many respects than hard skills and requires more strategic education from an earlier stage. While traditional school education is based on classroom lectures in which teachers explain knowledge to students, 21st century skills education is expected to increase the number of classes that incorporate discussion and group work in addition to classroom lectures. In addition to classroom instruction, 21st century skills education is expected to include more discussion and group work. There may also be an increase in experiments to confirm knowledge, apply knowledge, and create new knowledge.

Ohki (2014) states that intercultural competence is essential to cope with an increasingly diverse and complex society, and that the development of this competence is the very essence of global human resources. Intercultural competence is the mental "mindset" to live "interculturally" beyond one's own culture, and in this paper, intercultural Mindset is positioned as a mindset necessary for global human resources. The key word in today's society is "diversity". Even within Japan alone, there is no end to the diversification of nationalities, cultures, thoughts, and values. In order to survive this era, it is not necessary to work globally to need an intercultural mindset to succeed in the society.

5 Previous studies on COIL for fostering a intercultural mindset

After the March 2020, with the prolonged interruption of study abroad and training abroad, international educators, including language educators, have shifted their focus from over-focusing on mobility to "Internationalization at Home/IaH" (Ikeda, 2020) as an action against corona disaster, and COIL has received even more attention. Prior COIL studies include Ikeda (2015), who introduced a case study of online international collaboration as an outbound-promoting class practice, and others that examined the practice and issues of COIL-type classes between Japanese and American universities (Zen and Miyamoto, 2019, Yamashita, 2021, Wilson and Iwano, 2021, Okazaki, Ishikawa, and Nago, 2021), as well as a case

study of Wakayama University, which implemented a joint exercise between Japan and Indonesia on the common theme of SDGs (Fujiyama, 2021), and a case study of Kyoto University of Foreign Studies, which implemented a joint class between Japan and Russia with the keywords of improving communication skills and peer instruction (Kyoto University of Foreign Studies The case of joint classes between Japan and Russia at Wakayama University (Fujiyama, 2021), and the case of blended learning at Otaru University of Commerce (Nakatsugawa and Hirata, 2017), which combines face-to-face and online classes, are examples of the wide variety of practices and research being conducted in the target regions and contents of collaborative learning, coupled with the prolonged Corona Disaster. Kodama (2018) argues that COIL as a place for cross-cultural understanding and human education provides an opportunity not only to understand the other's culture and way of thinking, but also to develop a rational view of things that transcends self and ethnic culture, because it allows for relatively long-term and regular cross-cultural exchange compared to regular overseas training programs.

As already noted, COIL has already been described by various researchers as a possible way to foster intercultural competency. In addition, BEVI （The Beliefs, Events, and Values Inventory） tends to be used to measure the effectiveness of COIL classes, but BEVI was not used in the analysis of this paper. This paper is a qualitative analysis of the texts based on the reflection reports submitted by the students to determine what form of teaching worked to better cultivate the global Mindset of the students.

6 COIL in Universities and Colleges

Collaborative Online International Learning (COIL) is a learning method that was developed by The State University of New York (SUNY) in 2004. Since then, many universities are implementing COIL in their teaching methods. In 2018, the American and Japanese governments recruited universities to implement COIL in their programs, six American universities and thirteen Japanese universities were selected by their governments to be granted with a budget to develop COIL programs in their curriculum. The national university which realized the practice in this chapter is a member of the three universities (a prefectural and another private university) which collaborate on building an interdisciplinary COIL program. The program is titled: Development of Exploratory COIL Programs toward Human Security and Multicultural Coexistence. The main goal for this program is as follows:

The purpose of this program is to promote bilateral cooperation between Japan and the U.S. based on distance education and exchange programs using online education (COIL system), and to improve the multi-layered development of international higher education and student mobility, including the dissemination of education to third countries.

As mentioned above the main purpose for this program is focus on the U.S. but outcomes and methodologies should be expanded to third countries. The significance of this project is focused on the next three points.

1. To provide educational opportunities for learners who have difficulty in obtaining study abroad opportunities due to financial reasons or university curriculums.
2. To acquire a multifaceted understanding of issues and the ability to think from multiple perspectives through collaborative learning by diverse learners from different cultural backgrounds.
3. To enable effective learning through the use of video and interactive communication from the partner country in classes such as advance guidance for study abroad.

This methodology for enhance the international education will contribute to fostering students who can discuss global-scale issues from multiple perspectives, students will develop the ability to discover problems and solve problems by seeking directions for solutions that are rooted in reality, as well as the analytical skills to specifically examine the issues of safe and secure living, health, and social justice in human society as part of the real world. In addition, since group learning is the basis of the program, students will develop coordination and cooperation skills in groups. The COIL program was divided in four types of learning methods; 1. Collaboration in classes, 2. Mobility programs and COIL, 3. Inbound International Students loop program, and 4. COIL for places with difficulties. In this paper, the collaboration which is discussed is the No. 1: Collaboration in classes and this is going to be explained later.

The No. 2 is the COIL program which includes global mobility for study abroad programs and short-term programs. The methodology taken in these programs is to enhance the motivation of studying abroad and prepare the students who are going to study abroad through offering them classes to understand the differences in cultures and start to work in a cross-cultural environment. Professors and staff from partner universities give their lectures according to the designed program that the Japanese universities have prepared. Students follow the curriculum designed and coordinated by their faculty members at their home universities before their departure for their international program.

The No. 3 is the program designed for the international students who come to Japan. Each one of the three universities take a part on this program. The private university is in charge of offering the classes in English according to the student's interest. The national university offers Japanese and cultural classes for the international students in order to let them grasp Japanese affairs. Lastly, the prefectural university offers the opportunity of internships in the prefecture where this university is located and a major part of the industry of manufacturing is located in Japan. Through these experiences the international students can get a complete experience of having an academic, cultural and experimental experiences in Japan.

Lastly, No.4 is to offer subject based classes for the refugee's camps located in places where it is difficult to get an in-person education. It is a unreplaced opportunity for the Japanese students to get involved with students at the refugee's camps. Professors prepared for these interactions are in charge of these

classes and prepare the Japanese students to have a good communication with the students at the refugee's camps.

The type of learning method for the interaction discussed in this chapter is the No.1. It looks as the simplest one, but it requires for a lot of collaborative work and much more possibilities of development in the future. Collaboration of classes-based work is something that should start from the design of the class. In the national university, the syllabus of the classes is designed at least three months before it is released, and the students are able to check it before taking the class. Since the academic calendar of Japan and other countries are different, it is difficult to coordinate and design it from the very beginning together. Therefore, it is important to design the class separated the ordinary academic calendar and just include the online interaction with a mutual goal and method. This is how this time the participating universities coordinated in order to realize intercultural interactions. The mutual goas were to enhance the intercultural understanding of both sides and learn from each other regarding the different social systems. COIL does not have a particular online tool to proceed with the teaching method and in most of the cases Zoom was used as the communication tool. Among the participating universities, there were some of them that Zoom was not their communication tool for their ordinary classes, and they needed to learn on how to use it.

The COIL program experience, let the students think globally and try to bring the ideas to think about the Japanese situation. Giving their opinions and listening to the ideas of the students from the partner universities' countries and Japan, let them to foster their intercultural Mindset and think broadly and different. In order to exchange their opinions, professors in charge of the class discussed about potential topics that would help the students to develop their discussions. During the class the topics that were discussed were: gender issues, young people's social responsibilities, issues of race, Japanese affairs, and so on. The students prepared presentations with evidence and explained the situation of their countries. These topics allow them to think about not only the appointed topic, but intercultural understanding and pedagogy at each country. In total there were three classes per each session and each one focused in different topics. In the first class, in order to stimulate the interaction, the students introduced themselves with photos and easy Power Point slides. After the self-introduction, the students presented regarding their national issues and tried to think about the possible solutions by thinking other country's case. Viewing other countries can bring a critical point of view to their own country and learn how their country is seen by others. This is something difficult to do in a country such Japan which is an island, and it is difficult to see it from a different point. Critical thinking was one point that the students could learn from the interaction and think about not only the bad points but the good points of their countries. Critical thinking is a skill that workers in companies need in order to evaluate situations and is what they learn after they start to work. It would be efficient if the students at the university start to think critically and evaluate issues and contribute to the society by providing their ideas. The

university needs to provide these opportunities for the student in order to develop their opinions and COIL is one method to develop it.

The COIL program has a possibility to build a global mindset in students who think in a worldwide scale and start acting at their countries. This meets the goal that was set by the three Japanese universities which join the COIL program granted by the Japanese government. In this way, it can be said that this practice with the University of Burgos was a success meeting the goals that the COIL program has, and it can be a good model for more practices at universities. From the point of employability, students who attended to this program had the chance to expand their point of view and think more globally than just study surround Japanese students. This experience planted a seed that may sprout up after they move in the labor market.

7 Joint classes and its curriculum

The focus in this paper is joint classes with different universities in different countries. As an example, the writer will show different types of classes in order to expand the possibilities that COIL has according to the motives that the lecturer has. The examples are limited to the experiences of a lecturer at a Japanese university which has been emphasized the COIL as a tool to develop students' global Mindset. The motives of the classes were as follow: 1. Learning Japanese for non-native speakers through conversation with Japanese students, 2. Learning different cultures from different perspectives, 3. Deepen understanding of a specific topic through discussions.

7.1 Learning Japanese for non-native speakers through conversation with Japanese students

Students from universities that are learning Japanese in different countries were looking for the opportunity to have a conversation with Japanese students. The lecturer at these universities utilizing the collaborative learning agreement, contacted the lecturer at the Japanese university mentioned above to have these interactive learning. In order to make it happen, lecturers of both sides should have an online meeting and share their motives and opinions in order to complete the curriculum and the necessaries of each side. Since the main motive for this type of joint classes were to learn Japanese, the lecturer from the Japanese university tried to adjust to the curriculum of the partner university. The following is a summary of the steps to be taken to realize joint classes.

7.1.1 Curriculum alignment and co-taught portions of curriculum

Curricula already existed at each of the universities, making it difficult to make drastic changes. Therefore, it was decided to provide time for two to three exchanges during each given class period. It was meaningful to have an exchange to accomplish the curriculum and both sides needed to have the same amount of academic weight in their classes. For this purpose, it was necessary to exchange syllabi from both sides and discuss what kind of efforts would be made in the limited time available to both sides. It was necessary to exchange opinions not

only on the curriculum, but also on the criteria for evaluating students, so that lecturers on both sides could assign grades. Since the purpose of this joint class was to improve the Japanese language skills of students from overseas universities, the learning goal of the Japanese students was to learn about "learning Japanese as a foreign language" from the perspective of intercultural understanding. This is how it is needed to organize classes that are meaningful to both parties, keeping in mind that the objectives of the classes do not necessarily have to be the same, but they should not be completely different either. In the case presented here, the exchange was with students with intermediate Japanese language skills at an overseas university. Although the students had an intermediate level of Japanese language proficiency, the topics were pre-determined because the class was organized using the other university's teaching materials, and they were completely different aspects of "religion" and "food culture".

7.1.2 Time and timing of co-taught classes

Since this was a joint class with a university in a Nordic country and Japan, there was a time difference of about 7 hours. The lecturers from both universities consulted with each other about the time difference, and classes were set for the morning in the Nordic country and the afternoon in Japan, with 90-minute classes divided into three weeks. Japanese universities are required by MEXT policy to hold 90-minute classes, 15 times per semester. Of course, three online exchanges alone could not be assembled into a single class. Therefore, the Japanese university offered one class that could be used as a joint class, and the students could receive two Japanese credits for several online exchanges. The details of this class were designed in such a way that two credits would be awarded for conducting three sets of online exchanges, and the breakdown of one set is as follows. One 90-minute lecture will be given as a preliminary lesson. The pre-class was assigned to prepare for the online exchange, either in advance knowledge or in preparation for a presentation or discussion. The second through fourth sessions were actual online exchanges, which were set aside as time to give presentations to students from overseas universities and discuss a set topic (in this case, religion and food culture). In the fifth class, as a post-class, a meeting was held only for students on the Japanese side to reflect on the online exchange meeting and discuss improvements, so that the students could make the most of the next online exchange meeting. Three such sets were done, and two credits were awarded to students at the end of the semester. Student participation and post-event reports were used to evaluate and grade students.

7.1.3 Feedback and next steps

After the joint class, feedback by the students was sought and shared with both lecturers to help them review the next online exchange session. Student feedback was stipulated as an exclusion from the evaluation, so students were able to respond with honest feedback and suggestions for improvement. The students' highest evaluation was that it was very useful to learn about the country through exchanges of opinions and presentations with students from that country in the regular classes without studying abroad. Improvement points cited were the time

difference and the small number of co-curricular activities. Overseas students studying Japanese would like to have more asynchronous, if not synchronous, interaction on a more regular basis, and they hoped to create opportunities to exchange opinions outside of the online exchange meeting hours by using tools such as SNS and intranets. Although the online exchange classes were conducted in accordance with the respective curricula, the feedback from the students made the lecturers realize the need to devise ways to practice various forms of interaction among students.

Although there was no dramatic increase in the Japanese language skills of the students at the overseas university through the three online joint classes, the lecturer at the Japanese university received feedback from the lecturer at the partner university that it had improved the motivation of her students to learn Japanese. The Japanese students were surprised at the high level of the Japanese language ability of the students at the partner university, and the Japanese students' willingness to learn English and a third language improved as a result of direct conversation with students who learn Japanese as a foreign language.

7.2 Learning different cultures from different perspectives

During the period when long-term or short-term study abroad, programs were not available due to the spread of COVID-19, it was difficult to experience foreign cultures and situations firsthand. The students on the Japanese side strongly requested the creation of opportunities to experience different cultures in English, and the lecturers contacted faculty members at partner institutions abroad to explore the possibility of such opportunities for joint classes. To build a joint class that leads to intercultural understanding, it was created the class together with faculty members from overseas universities based on the following points.

7.2.1 Curriculum alignment and co-taught portions of curriculum

In this case, unlike joint classes for the purpose of Japanese language learning, it was difficult to proceed in a manner completely in accordance with the curriculum of the overseas university because of the additional objective of deepening cross-cultural understanding at the Japanese side. Therefore, it was necessary to have online exchanges with overseas universities with similar curricula, while respecting the curriculum structure of the Japanese side to some extent. The Japanese side made a request for joint classes to partner universities with which it could cooperate in a manner that would allow to clarify the curriculum of the Japanese side. Although it was necessary to coordinate curricula with overseas universities, cross-cultural understanding as the basis for joint classes was central to the objectives of the online exchange, and the second and third objectives were established separately at each university. Some of these exchanges were conducted with universities in Europe and North America, some as part of a single class, and some foreign universities as a single, independent event. The universities that implemented the program as part of a single class had to follow certain regulations regarding evaluation criteria and the number of hours. The Japanese credit system and the credit system of overseas universities are different, and there are differences in the number of hours required and evaluation

criteria, but the two were adjusted to the point where a compromise could be reached, and these were considered as part of the coursework. Coordination with foreign universities that were not part of the class was easier. Time and evaluation criteria could be arranged solely according to the wishes of the Japanese universities, and students from the overseas universities were involved as volunteers regardless of their involvement in the class. Although it is necessary to question the necessity of the joint class as a concept, the students who participated as volunteers also received some preliminary lessons from faculty members of the overseas universities and learned about online exchange.

7.2.2 Time and timing of co-taught classes

In terms of time difference, online exchanges with European universities were not that much of an obstacle, but with North American universities, the time difference had to be carefully considered and the time of online exchanges had to be defined. The time for online exchange with North America was shortened to 60 minutes instead of 90 minutes for online exchange because it was to be done late at night or early in the morning in Japan. To make the online exchange time more meaningful, presentations were pre-recorded on topics that students actually wanted to discuss, and the videos were shared to prepare them for the time of the online exchange meeting. In order to prepare for the pre-recorded video, the Japanese side provided lessons on how to decide on a topic and structure a presentation as a preliminary lesson. It was difficult to determine a topic that would lead to intercultural understanding, but the Japanese side's lecturer had conducted research on intercultural understanding and was able to offer students tips on how to get to know each other better. When deciding on the topic, we also contacted the lecturers at the overseas universities and communicated with them thoroughly to ensure that there were no differences with the syllabus of the other side. The curriculum for the joint class was developed after consulting with the lecturers at the overseas university on the kind of discussions that could be expected to develop.

7.2.3 Feedback and next steps

The breakout room function of Zoom was used during the online interaction of the collaborative class to create an environment in which students could break into small groups for discussion. Student feedback indicated that these small group discussions were effective. Some students reflected that it was a very valuable opportunity for students to communicate with each other in English without the intervention of faculty members, which is not often provided at Japanese universities. Feedback was also received that allowing more time for students to talk to each other not only allows them to discuss a given topic, but also to expand on their individual interests and have more in-depth discussions. It was found that in these online exchanges, students built relationships and developed further steps to connect and talk online outside of class and discuss how they were doing at each other's universities. Although online, participants were also able to participate in club activities at overseas universities and commented that although it was not the same as studying abroad, it was very meaningful for them to learn about life at an overseas university. Lecturers on both sides agreed that the potential

benefits of such online exchanges were so much more positive than when they were first planned that some universities agreed to continue them once the pandemic subsided and study abroad resumed. It was confirmed that the online exchange meetings provide one opportunity for students who are not interested in studying abroad to think about studying abroad, and that this is a very meaningful initiative in promoting study abroad.

This was an initiative that saw the potential of online exchange classes as a new perspective on intercultural understanding education, which in the past could not be realized without going out through study abroad. The most effective aspect of the program was that it was structured as a student-centered class, and topics of interest to the students were covered. Although the topics of interest to the students were covered, the evaluation and organization of the class was designed by the instructor and the level of educational achievement was sufficient to ensure its level of excellence. The quality of the class was to some extent assured by the students' perception that the class was not merely a place for "chatting" as in a global café, but rather an educational structure and evaluation.

7.3 Deepen understanding of a specific topic through discussions

The third type of joint class was to discuss a single global issue and exchange views on each perspective and the perspectives being discussed in each country, with the goal of discussing the issue from a variety of perspectives. These exchanges took place at universities in Europe and North America. It was exchanged views on how cultural diversity and employability are handled and perceived in each country. The following flow was used to prepare for these joint classes.

7.3.1 Curriculum alignment and co-taught portions of curriculum

This type of joint teaching is the most difficult, as the curriculum must be shared with the partner university from the beginning and may be modified as needed. In order for students to understand an issue from various perspectives, it is necessary for lecturers to exchange opinions about each country's context in advance, and it is fundamental to discuss what students will learn through this class. Also, since the students will be discussing and learning about the same topics, the evaluation criteria will need to be consistent to some extent, and this should be discussed among the instructors in advance. At Japanese universities, syllabi must be submitted and revised at least three months before the semester begins, and preparation for these types of classes takes considerable time. Thus, it takes even more time to structure joint classes, and the different start times of the semesters at each university make it difficult to offer all classes jointly. In this joint class, the content of the syllabus and classes with common objectives were discussed and practiced with the instructor in charge before the start of the semester. In addition, since it was difficult to conduct all classes jointly, a portion of the classes were jointly offered as a period for preparation and reflection at each university. Students prepared a self-introduction video and exchanged social networking tools and other information in advance of the event. In addition, students were paired with other students to give them an opportunity to get to know each other to some

extent before the online exchange. Only after such advance preparation was time set aside for an online exchange meeting. This preparation allowed the students to get to know the other university to a certain extent during the online exchange meeting, and created an environment conducive to discussion.

7.3.2 Time and timing of co-taught classes

Such a class that discusses a specific topic and requires a certain outcome requires a significant amount of prior knowledge. In addition, it is necessary to gather information on how the context is treated not only in one's own country but also in the international community and various opinions, which requires a completely different preparation and attitude from the two previously mentioned class styles. It is not enough to construct opinions from the students' own perspectives; it requires a well-developed class structure, not just a preliminary lesson, and places a greater burden on the instructor than in the other two styles. Three online exchange meetings were held, but the online discussion was positioned as part of the overall discussion, and asynchronous development of the discussion was required. Tools such as Padlet and Slack were used in this effort to create an online forum for discussion on a single topic. Padlet and Slack were great places for asynchronous discussions. Students were able to express their opinions and seek comments on those opinions without having to take into account the time difference. Through this exchange, students were able to clarify points that were not clear during the actual synchronous discussion time, and to have a deeper discussion. The instructor needed to take on the role of facilitator even during asynchronous discussions, and it was necessary to correct the course of student discussions and provide effective references and other information.

7.3.3 Feedback and next steps

Feedback was received that the weight of this class was very heavy and was burdensome for the students. Some students responded that it took a long time to construct a single opinion during asynchronous discussions, and that it was difficult to present evidence and other information. In Japanese universities, students build arguments with evidence in their final reports of lectures, etc. In this class, however, students always had to write and prepare their opinions as if they were writing their final reports, which was a clear difference from other classes. In light of the fact that this was not such a big burden for students at European and North American universities, it was also clear that the preparation and required outcomes for Japanese university classes are not as high as those in Europe and North America. This is reflected in the large difference in the number of classes that students take per semester, suggesting that Japanese university students take far more classes per semester than their Western counterparts. These differences have made a difference in the students' approach and attitude toward a single class, and this is an issue that has become apparent in this content-centered approach to teaching. Many students responded that one approach to thinking about global-scale issues was to have discussions with people who grew up in different countries rather than with students in their own countries, indicating the importance of this type of class. Studying abroad puts one in the position of a minority and allows to learn about the ideas and perspectives of the host country,

but one may fail to grasp the ideas of one's own country. However, the students' reflections indicate that studying in an online environment with students from other countries and with students from their own country has the advantage of allowing them to learn about the perspectives of other countries while presenting their own country's position.

Students were able to acquire a variety of "learnings" through classes that taught different perspectives on a single topic. The lecturers were also made aware of the differences between the different countries in higher education institutions, and the different qualities that they seek in student outcomes were also discovered through this experience. Although each instructor gave his/her own evaluation method for this class, in the future it will be necessary to find a system for jointly evaluating classes. This third teaching style highlighted the difficulties and challenges of collaborative teaching. Rather than a mere exchange, the issues remained as to how to position the collaborative learning through the exchange and what evaluation methods could be used to give students fair grades.

8 The possibilities and challenges of COIL

The three class types in this issue provide a view of how to construct a collaborative class by level of difficulty. The easiest method is to build a class based on the syllabus and curriculum of the partner university. This requires a flexible syllabus structure and student support from one's own side. The purpose of the joint class is to meet the teaching objectives of the partner university, and from one's side is expected to provide the material for the class. In this case, rather than careful preparation, it is necessary to prepare the content required by the other university, and this can be done without spending a great deal of time on it, as this case shows. The composition of such a class requires that from this side has the material for it on one's side and be ready to provide it immediately. For example, in this case, the key word was "Japanese language education," and since the class from this side was mainly composed of native Japanese speakers, the Japanese students were involved as an opportunity to think about Japanese as a native language and as a foreign language, while at the same time meeting the needs of the other side, which was to have a conversation with a Japanese speaker. This requires some ingenuity in setting objectives on one's side while meeting the needs of the other side and linking them to the students' learning, but it is not that big a task, so it is relatively easy to tackle. On the other hand, the second style of teaching, which is implemented as intercultural understanding education, needs to be incorporated into the common syllabus to some extent. In intercultural understanding education, it is necessary to give students an awareness of what their own culture is and what other cultures mean in advance, and it is necessary to spend time not only for unifying the syllabus but also for students to prepare in advance. Students will learn about their own culture awareness through the exchange, but post-classroom instruction will also be necessary for its retention. Therefore, more time needs to be allocated for this type of class compared to the first style. It is also needed to consider whether it is providing good academic material to the other side while taking into account the learning on one's side. Efforts should also be

made to improve the quality of students' advance preparation, presentations, and discussions, and instructors should inform students in advance that they need to be prepared in this way. Of the three teaching styles presented here, the third style seems to be the most difficult. This is not just an exchange but requires careful discussion with the lecturers of the other side on various aspects, such as class structure, implementation methods, evaluation methods, and so on. In such cases, it must be kept in mind that the weight of the class may vary from country to country. As already mentioned, the number of courses taken per semester in Japan is much larger than in Western universities, and students have limited time to prepare for each class. However, if it is possible to prepare in advance with time, it should carefully consider the content and required level of the other university's classes and reflect them in one's syllabus and curriculum to determine how much effort is required of the students in advance.

The introduction of COIL classes cannot be accomplished solely through the efforts of individual instructors. In some cases, these classes are an effort outside of the prescribed time frame and may not be possible during regular class hours. Taking into account the time difference, it is also necessary to conduct classes at night or early in the morning. Therefore, it is necessary to support universities that can work on such a class system. In addition to class hours, flexible management of syllabi is also required, and it should be recognized that there are some things that cannot be managed within the framework of regulations. The case of this Japanese university was set up as a free elective course that can be flexibly tackled as a class. In addition, COVID-19 pandemic provided an environment where online classes could be easily implemented. However, COIL courses should be introduced into the regular curriculum and implemented during normal times, not as an alternative measure during a pandemic. As can be seen from this case study, many students have acquired different perspectives and become able to think in diverse ways by taking the same classes as students from other countries while still in their own countries, not as a form of study abroad, and this has also led to the promotion of study abroad.

As mentioned above, Japan is actively introducing a curriculum that focuses on the development of global human resources, but it is questionable whether learning about global issues in Japanese and among Japanese people is truly leading to global learning in the true sense of the word. The author believes that such COIL subjects play a major role in fostering global human resources while remaining in their home countries. It is needed to think about how we can connect with the world and learn from people of the same generation around the world in an uncertain era where we do not know when such a pandemic will occur again in the future. It is also needed to take initiatives that cannot be done within existing frameworks alone, and it is necessary that institutions of higher education need to respond flexibly to such frameworks. There is a major challenge of guaranteeing the quality of education, it is necessary for various countries to work together to think about the future of higher education, rather than thinking only about one country.

9 Conclusion

The intercultural Mindset that the students acquired through this initiative can be defined as follows:

1. Interculturally critical mindset: Through COIL courses, students were able to gain an objective view of their own culture. They usually live in their own culture and do not question anything within the framework of so-called "common sense" and "common practice". However, by exchanging opinions with students from other countries in the COIL course, they were able to reflect on their own culture from multiple perspectives and think about the differences between their own culture and that of other countries. Through the discussions, they were also able to notice the good points of their own culture, and they could say that they were able to look at their own culture critically.

2. Cooperative learning: In the COIL course, students worked in groups to communicate their opinions to students from different cultures. Japanese students, who usually associate with Japanese people, had difficulty in communicating their opinions in a way that was easy to understand for students from different cultures. Various studies have already demonstrated that Japanese society is a very high context culture, but it is difficult to use low context communication methods (Meyer, 2014). The challenge is how to communicate in a language other than Japanese, and this class has further deepened the understanding of this issue.

3. Communication using a variety of tools: Students made an effort to communicate their views using a variety of tools in an online environment. For synchronous online discussions, Zoom and Teams were used to exchange opinions, while for asynchronous interactions, online tools such as Slack and Padlet were used to exchange opinions. Some of the students, who had only experienced face-to-face communication, became able to handle these tools at will. They also created their own videos for asynchronous presentations and shared the videos themselves. These hard skills were developed through the COIL courses.

The results indicate that the skills required of global human resources were developed to some extent in this online environment. Such learning should also be promoted in the wake of the pandemic and should continue to be promoted now that study abroad has resumed, and COIL courses have achieved a certain level of success. Although it may become more difficult to realize due to university budget cuts associated with study abroad and students' yearning to travel abroad, I believe that COIL courses will continue to find their potential as a means of learning before and after study abroad and building connections with regions that are difficult to travel to. By promoting this type of learning, it will be possible to educate students about diversity and foster a more multiculturally adaptable citizenry without learning abroad and being in Japan.

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12

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Student experiences during the COVID-19 pandemic: the case of Japanese higher education

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Abstract. The global coronavirus disease 2019 (COVID-19) epidemic has substantially changed Japanese society, including the ways people live and work. The higher education environment is no exception. Since February 2020, when Japanese universities busied themselves with their administering entrance examinations and preparations for the next academic year, they have struggled to deliver high-quality education in the voluntary-regulation-based new normal caused by the COVID-19 pandemic, along with countermeasures planned and implemented by the Japanese central and local governments. Most courses were delivered online synchronously or asynchronously during the academic years 2020 and 2021, and students' opportunities to interact were substantially limited at school, socially, and in daily life. Given the unprecedented experiences that Japanese students had during these years were, it was expected that they would want to return to their pre-COVID-19 lifestyles. However, according to the results of questionnaire survey the authors conducted, Japanese students recognised the advantages and disadvantages of the new normal with COVID-19. We may be in the midst of a transformation to a new normal educational and learning environment after the COVID-19 pandemic.

Keywords: COVID-19, Higher Education, Students, Attitudes to Learning, Japan.

1. Introduction

The global coronavirus disease 2019 (COVID-19) epidemic has caused substantial changes in various aspects of Japanese society, including the ways people live and work. The higher education environment is no exception. Since February 2020, when Japanese universities busied themselves with their administering entrance examinations and preparations for the next academic year (a Japanese academic year starts on 1 April), they have struggled to deliver high-quality education in the voluntary-regulation-based new normal caused by the COVID-19 pandemic, along with countermeasures implemented by the Japanese central and local governments. Most courses during the academic years 2020 and 2021 were delivered online synchronously or asynchronously using remote meeting systems and/or learning management systems, and students' opportunities to interact were substantially limited at school and in their social and daily lives. The experiences Japanese students had during these years were unprecedented and supposedly trying. However, it is unclear how they feel about the situation. Do they want to return to their pre-pandemic lifestyles? Have they acclimated to their new surroundings?

This chapter explores the attitudes of Japanese students towards the social changes caused by the COVID-19 pandemic, with a particular focus on changes in the higher education learning environment. The authors briefly examine the social changes in Japan, then discuss students' attitudes towards the new normal educational and learning environment based on the results of a questionnaire survey of university students that was conducted from September 2020 to October 2020.

2 Social changes caused by the COVID-19 Pandemic in Japan

Cases of pneumonia of unknown aetiology were reported in Wuhan, China in December 2019. Few individuals realised that this was the beginning of a serious situation, which has continued until the present day. Even after the cause of the disease was identified as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in early January 2020, optimistic views about the infection were expressed by healthcare professionals, including the World Health Organisation (WHO). Based on the information provided by Chinese authorities, the WHO stated that SARS-CoV-2 could cause severe illness in some patients but that it was not easily transmitted among people (WHO 2020a); moreover, there was no significant human-to-human transmission and no infections among healthcare workers had occurred (WHO 2020b). However, it soon became apparent that such views needed to be revised, and the seriousness of the global impact of COVID-19 began to be understood. Finally, on 11 March 2020, the WHO declared COVID-19 a worldwide pandemic.

Because of the lack of accurate information concerning the characteristics of SARS-CoV-2 and its variants, the COVID-19 countermeasures of the Japanese government have been slightly delayed. Additionally, the government has been forced to formulate and implement a two-pronged strategy to deter the spread of infection and avoid a recession caused by the pandemic, since the very early stage of the spread of the infectious disease. Notably, during Chinese New Year 2020 (24–30 January), border control measures were ineffective; rather than restricting entrance by Chinese tourists, the government placed a priority on the economic effect of shopping sprees by such tourists. This tourist activity may have contributed to the spread of COVID-19 in Japan (Nakahara 2020).

However, the risks of COVID-19 became widely recognised in Japan by the end of January 2020, and societal changes began to be observed. COVID-19 was designated as a category-2-plus (quasi-most serious) disease under the Infectious Disease Law based on Cabinet Order No. 11 of 2020, which was promulgated on 28 January to strengthen the communicable disease control systems centred on local public health centres. However, the effectiveness of this policy was limited due to the lack of sufficient manpower in those centres and the insufficient number of infectious disease hospitals, as well as the poorly developed information environment in the public healthcare sector. The Japanese national and local governments recommended basic infection control measures, such as frequent hand washing, gargling, and wearing masks when going out. Antibacterial hand

soaps and face masks soon became difficult to purchase. Spray bottles of alcohol disinfectant solution were placed at the entrances to most public and private facilities, including town offices, schools, hospitals, theatres, shops and restaurants; visitors were required to disinfect their hands before entering facilities.

In February 2020, 712 of the 3,711 passengers and crew aboard the Diamond Princess, a luxury cruise ship that called at the port of Yokohama, reportedly contracted COVID-19 and 14 people died (Yamagishi et al. 2020). This news raised the awareness among the Japanese people concerning the high infectivity of SARS-CoV-2 and the potential for rapid progression to a serious health condition.

The Basic Policies for Novel Coronavirus Disease Control, issued by the government at the end of February, emphasised the importance of social distancing and frequent room ventilation, in addition to wearing masks and frequent hand washing (Headquarters for Novel Coronavirus Disease Control 2020a). Unlike governments in other countries, the national and local governments of Japan asked for cooperation from the people; thus, rather than adhering to strict governmental requirements, the people followed infection control precautions outlined by the government to prevent further spread of COVID-19. The entry of international travellers other than diplomats was banned on 3 April 2020, and returnees were required to self-quarantine for two weeks. Urban lockdowns were not adopted to prevent infection, based on the lack of domestic laws that would legitimatise such measures. Instead, the governments asked for people to avoid the three C's (closed spaces, crowded spaces, and close-contact settings) (Tanaka 2021), and encouraged companies to introduce teleworking and reduced business hours (Ministry of Health, Labour and Welfare 2020).

Japan was hit by the first wave of the COVID-19 pandemic in March 2020. The appearance of new SARS-CoV-2 variants has resulted in six waves of infection, four state of emergency declarations, and one declaration of a quasi-state of emergency as of this writing; all have been issued in response to waves in the Greater Tokyo Area and other affected areas (Figure 1). Thus far, the Japanese government has not changed its fundamental attitude towards COVID-19 countermeasures, which centres on calling for cooperation from individuals and private organisations. Therefore, a voluntary-regulation-based new normal has been created in Japan.

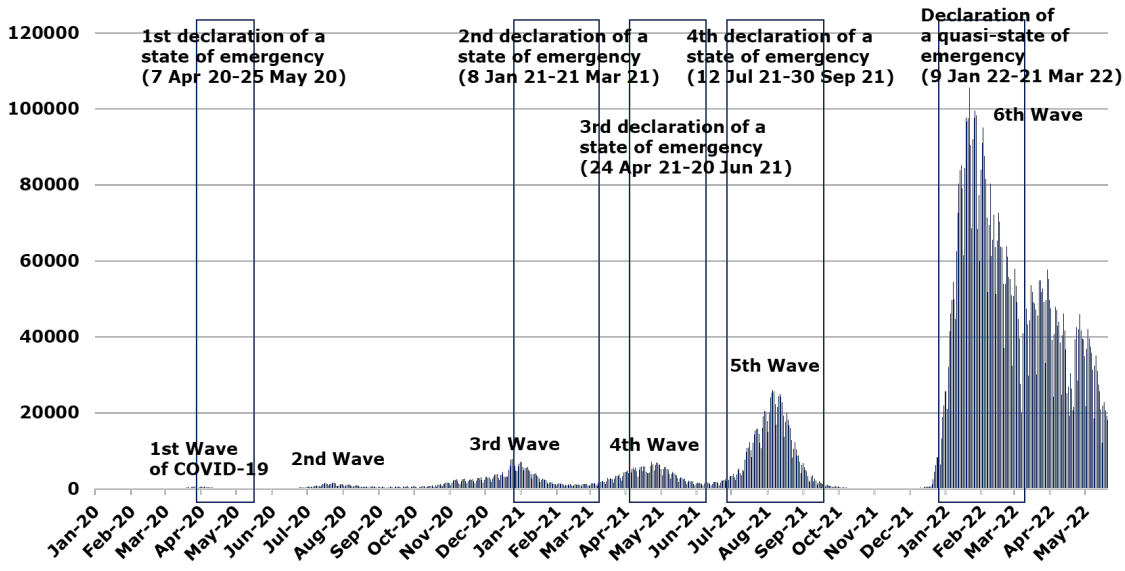

Fig. 1. Numbers of confirmed cases of COVID-19 in Japan.
Source: Prepared by the authors using data published by NHK (n.d.).

The Japanese national and local governments encouraged people to avoid unnecessary outings to reduce human-to-human contact as basic anti-COVID-19 measures. When a state or quasi-state of emergency was declared, commercial facilities that attract people but are unnecessary for maintaining a social life (e.g., department stores, playhouses, film theatres, and live music venues) were requested to temporarily close or reduce their business hours; additionally, people were urged to refrain from domestic travel across prefectural borders. The organisers of sporting or music events were required to arrange a temperature measurement for every spectator (individuals with a fever with temperatures above 37.5°C could not enter the event venue), enable spectators to disinfect their hands before the entrance gate, and encourage spectators not to shout during the event. When the infection situation worsened, those events were voluntarily cancelled or held behind closed doors. After postponement for one year, the Tokyo Olympic Games were held without spectators in 2021 during the issuance of the second state of emergency declaration. Local governments asked restaurants and pubs to refrain from serving alcohol and remaining open until a late hour of the night; they also asked such establishments to suspend their business during a state or quasi-state of emergency (Komaki 2021).

The number of confirmed COVID-19 cases reached a record high in February 2022, due to the spread of the highly infectious omicron variant. However, the Japanese government lifted the declaration of a quasi-state of emergency on 22 March 2022 because the variant was sufficiently attenuated and had a low risk of producing serious symptoms. This removal of the quasi-state of emergency indicated that governmental policies had begun to focus on rebuilding the Japanese economy, which had been weakened by the coronavirus pandemic, and regaining a usual day before COVID-19. However, some of the lifestyles in the new normal created since the early phase of infection had become entrenched in Japanese society. The results of a survey conducted by the Job Research Institute in May 2022 showed

that 618 (87.3%) of 708 respondents intended to continue to wear face masks and 440 (62.1%) had negative feelings about individuals who did not wear masks (Job Research Institute 2022). Because of peer pressure, young people reportedly tended to hesitate to pull their face masks off when leaving home, as well as during homework or remote classes (Wada 2022). It has been very difficult to regain the pre-COVID-19 lifestyle in Japan.

3 Japan's Higher Education Environment in the New Normal

3.1 Changes in learning styles and lifestyles because of the COVID-19 Pandemic

On 27 February 2020, at a meeting of the Novel Coronavirus Response Headquarters, then-Prime Minister Shinzo Abe expressed his intention to ask primary, junior high, high, and special-needs schools to consider temporary closures from 2 March to 5 April (the last day of the spring break) to prevent the spread of COVID-19 among children (Headquarters for Novel Coronavirus Disease Control 2020b). The next day, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) made a formal request for school closure (MEXT 2020a).

Approximately a month later, the ministry issued a notice to higher education facilities, including universities and technical colleges, that urged them to introduce remote teaching for the next academic year (MEXT 2020b). Consequently, most Japanese universities postponed the start of the spring semester (662 [88.5%] of 784 universities; MEXT 2020c) and prepared a remote teaching environment. Most in-person classes at Japanese universities were replaced by remote classes during the academic years 2020 and 2021, which were conducted live using online meeting systems or through videotaped lectures that were available to students via the learning management system. According to the MEXT report regarding the status of education and learning at higher education facilities, published in mid-July 2020, all 1,012 universities that responded to the MEXT survey offered classes; of those universities, 858 (84.8%) introduced remote teaching and 239 (23.6%) only offered remote classes (MEXT 2020d).

In-school classes at primary and secondary schools resumed in early June 2020, but universities were required to encourage their students to stay home as much as possible throughout the academic years 2020 and 2021 by the national and local governments. Thus, students lost opportunities to directly interact with university friends and participate in club activities at their universities. In addition, it was difficult for them to find good part-time jobs because universities requested that students refrain from going out; moreover, local shops, restaurants and pubs were suspended or closed.

Distance education was almost fully introduced at most universities in Japan; this modality was a brand-new experience for students, faculty and staff. The COVID-19 pandemic led to substantial change in Japanese higher education; it also forced faculty and staff to consider the best form of education and learning at universities during the new normal. However, most students were confused by the situation (see, for example, Aoki et al. (2021) and Orito et al. (2021)). Additionally, most

students who entered universities in the 2020 academic year may have been disappointed because they did not experience face-to-face learning or in-person interactions with other students and faculty members for two years.

3.2 Student attitudes towards altered learning styles

3.2.1 Overview of the questionnaire survey

An online questionnaire survey of university students was conducted to investigate their attitudes towards changes in the educational and learning environment caused by the COVID-19 pandemic; the survey was conducted from September 2020 to October 2020, using Google Forms. In total, 262 completed responses were received (out of 271 submissions). The attributes of the respondents are shown in Table 1. The respondents lived in 17 prefectures including Tokyo, Toyama, and Ehime; they were enrolled in 21 university faculties, including economics, collaborative regional innovation, commerce, engineering, informatics, and science and engineering.

Table 1. Respondent attributes (*n* = 262).

Gender	Male			Female			Other/Prefer not to answer	
	140 (53.4%)			117 (44.7%)			5 (1.9%)	
Com-muting time	Less than an hour				More than or equal to an hour			
	174 (66.4%)				88 (33.6%)			
Major	Humanity and social sciences				Natural sciences			
	Economics	Collaborative regional innovation study	Commerce/ business administration	Other	Engineering	Informatics	Science	Other
	59 (22.5%)	53 (20.2%)	29 (11.1%)	16 (6.1%)	47 (17.9%)	40 (15.3%)	16 (6.1%)	2 (0.8%)
	157 (59.9%)				105 (40.1%)			

3.2.2 Survey results

The respondents tended to prefer face-to-face classes (144 of 262 [55.0%]) over remote classes (118 [45.0%]), as shown in Table 2, though each of the ways of delivering lectures has its own advantages and disadvantages.

Table 2. Face-to-face vs. remote classes: students' preferences (*n* = 262).

Do you prefer face-to-face or remote classes?	Number	%
Face-to-face classes	144	55.0
Remote classes	118	45.0
Total	262	

The reasons for preferring face-to-face classes, in descending order of the number of respondents who reported them, were: "I can keep my personal and school lives separate" (105 of 144 [72.9%]), "I can be in a classroom with my friends" (104 [72.2%]), "I am assigned reports less frequently" (81 [56.3%]), and "I can stay focused in class" (80 [55.6%]), as depicted in Figure 2.

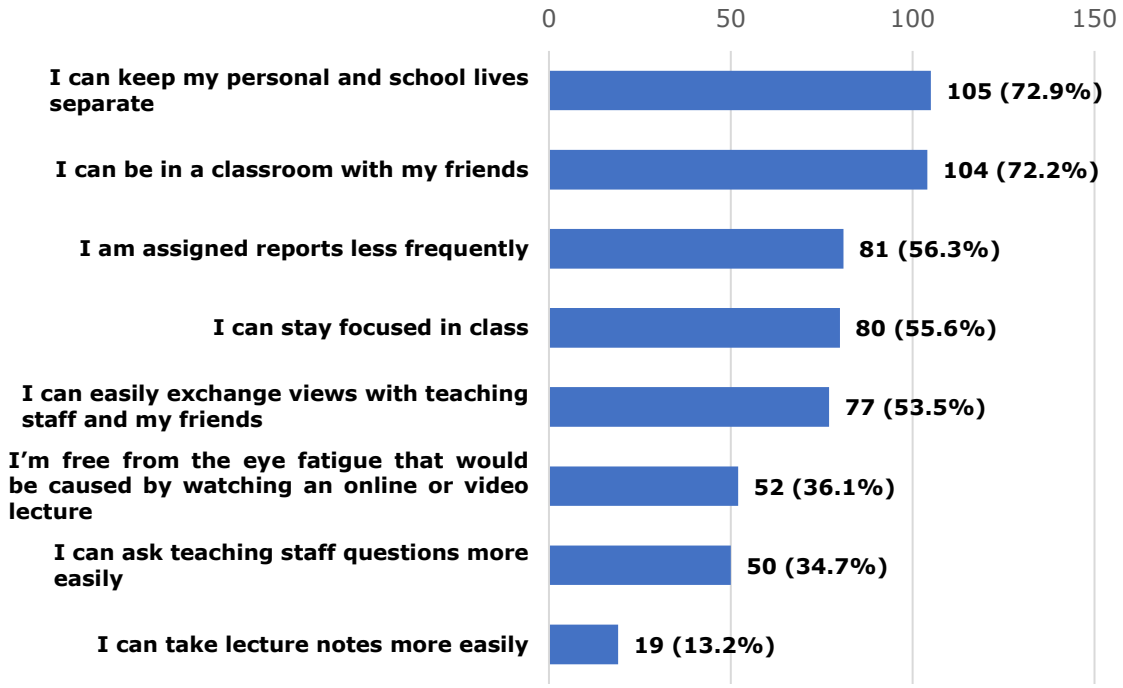

Fig. 2. Reasons for preferring face-to-face classes (multiple answers allowed) (*n* = 144).

In contrast, respondents who preferred remote classes over face-to-face classes positively evaluated the unique aspects of remote lectures. As shown in Figure 3, 96 (81.4%) of 118 such respondents reported: "I can take courses at my convenience" as a reason for preferring online classes. "There is no commuting time" was cited by 84 (71.2%) respondents as a positive aspect of remote education through information and communication technology. The third reason

was "I can watch videotaped lectures repeatedly" (78 [66.1%]), followed by "I can take courses during a state of emergency" (65 [55.1%]).

The percentage of respondents who chose "I can ask teaching staff questions more easily" as a reason for preferring face-to-face classes (50 of 144 [34.7%]) was higher than the percentage of respondents who preferred remote classes (11 of 118 [9.3%]). This, and other reasons for preferring face-to-face classes, suggest that the formation of human relationships and the development of interpersonal communication styles which in-person education and learning can facilitate were regarded as positive aspects of face-to-face classes.

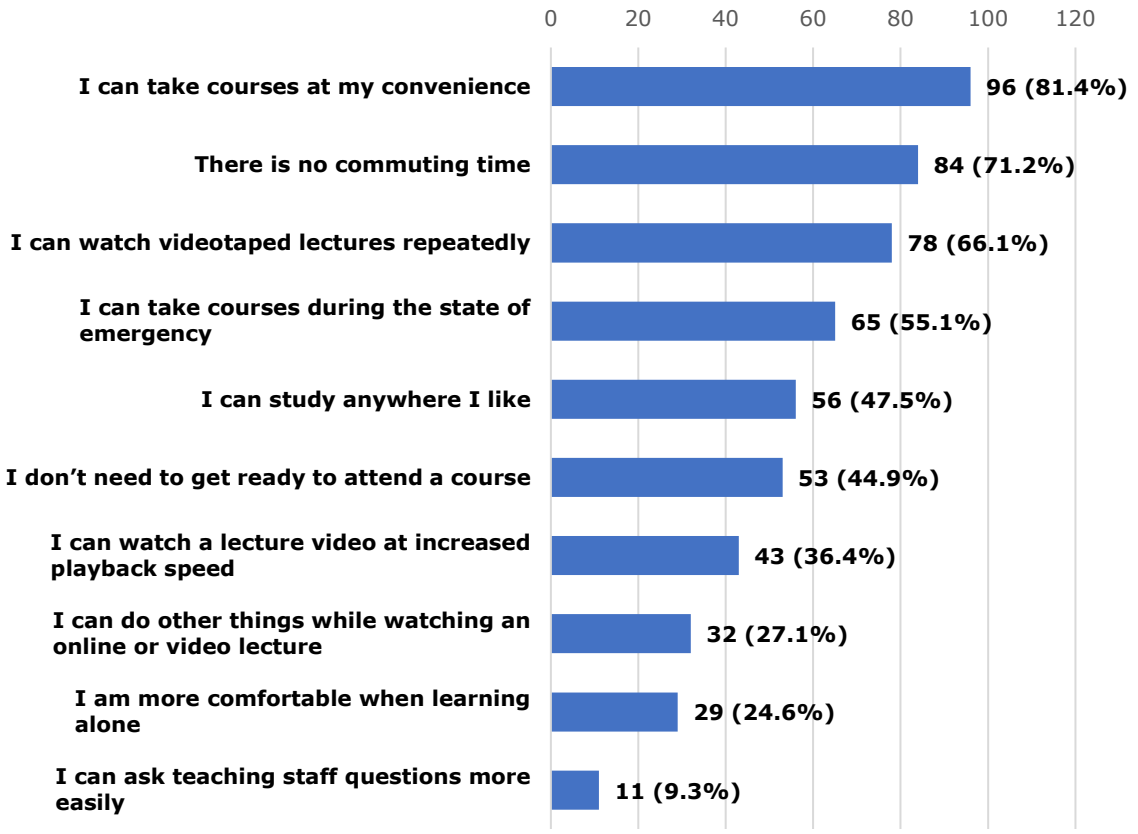

Fig. 3. Reasons for preferring remote classes (multiple answers allowed) (*n* = 118).

To the question "Do face-to-face or remote classes better promote your understanding of lectures?", most respondents answered "face-to-face classes" (136 of 262 [51.9%]), whereas slightly more than 20% of respondents answered "remote classes" (62 [23.7%]) and a similar percentage of respondents answered "no difference in understanding between face-to-face and remote classes" (64 [24.4%]) (Table 3).

Table 3. Face-to-face vs. remote classes: understanding of lectures (*n* = 262).

Do face-to-face or remote classes better promote your understanding of lectures?	Number	%
Face-to-face classes	136	51.9
Remote classes	62	23.7
No difference	64	24.4
Total	262	

Respondents exhibited considerable disagreement concerning whether remote classes should continue to be offered after the COVID-19 pandemic is completely under control, as shown in Table 4. This result may represent students' mixed feelings about remote education during the pandemic.

Table 4. Continuation of remote classes after the pandemic (*n* = 262).

Should remote classes continue after the COVID-19 pandemic is completely under control?	Number	%
Agree	33	12.6
Partially agree	82	31.3
Partially disagree	97	37.0
Disagree	26	9.9
Don't know	24	9.2
Total	262	

Because experiments and practical training, which are generally conducted in person, are essential components of education and learning in fields such as natural sciences, it is likely that each respondent's major field of study affected their attitude towards the lecture format. The respondents were divided into two groups based on their majors: respondents who majored in the humanities and social sciences (HSS students) and respondents who majored in the natural sciences (NS students). As shown in Table 1, 157 and 105 respondents were HSS and NS students, respectively.

As indicated in Table 5, most respondents preferred face-to-face classes: 82 of 157 (52.2%) HSS students and 62 of 105 (59.0%) NS students. The results of a chi-squared test demonstrated no significant difference in this preference between the two groups (p = .2770).

Table 5. Face-to-face vs. remote classes: student preferences according to major (*n* = 262).

Do you prefer face-to-face or remote classes?	Major			
	Humanity and social sciences		Natural sciences	
	Number	%	Number	%
Face-to-face classes	82	52.2	62	59.0
Remote classes	75	47.8	43	41.0
Total	157		105	

Nearly 60% of NS students (60 of 105 [57.1%]) indicated that face-to-face classes better promoted their understanding of lectures, compared with remote classes (21 [20.0%]), whereas less than a half of HSS students indicated such an effect (76 of 157 [48.4%]). In contrast, more than 20% of respondents reported no difference in their understanding of lectures between the two formats (40 of 157 HSS students [25.5%] and 24 of 105 NS students [22.9%]) (Table 6). However, there was no significant difference between HSS and NS students in the lecture format that promoted their understanding of lectures (p = .3507).

Table 6. Face-to-face vs. remote classes: understanding of lectures according to major (*n* = 262).

Do face-to-face classes or remote classes better promote your understanding of lectures?	Major			
	Humanity and social sciences		Natural sciences	
	Number	%	Number	%
Face-to-face classes	76	48.4	60	57.1
Remote classes	41	26.1	21	20.0
No difference	40	25.5	24	22.9
Total	157		105	

Commuting time was investigated as a potential factor affecting student preferences for the teaching format. Nearly 60% of short commuters, respondents whose commuting time was less than an hour, preferred face-to-face classes over remote classes (104 of 174 [59.8%]), whereas most long commuters, respondents whose commuting time was more than or equal to an hour, preferred remote classes (48 of 88 [54.5%]), as shown in Table 7. The results of a chi-squared test confirmed that commuting time significantly affected the teaching format preference at 5% level (p = .0278). This may represent the convenience of remote classes for students who would have had a long commute in the absence of the pandemic. Moreover, as Table 8 shows, more than 30% of long commuters (29 of 88 [33.0%]) indicated that remote classes better promoted their understanding of lectures, compared with face-to-face classes, while less than 20% of short commuters reported such an effect (33 of 174 [19.0%]). A significant difference was observed between short and long commuters in the teaching format that better promoted their understanding of lectures at 5% level (p = .0422).

Table 7. Face-to-face vs. remote classes: preference according to commuting time (*n* = 262).

Do you prefer face-to-face or remote classes?	Commuting time			
	Less than an hour		More than or equal to an hour	
	Number	%	Number	%
Face-to-face classes	104	59.8	40	45.5
Remote classes	70	40.2	48	54.5
Total	174		88	

Table 8. Face-to-face vs. remote classes: understanding of lectures according to commuting time (*n* = 262).

Do face-to-face classes or remote classes better promote your understanding of lectures?	Commuting time			
	Less than an hour		More than or equal to an hour	
	Number	%	Number	%
Face-to-face classes	96	55.2	40	45.5
Remote classes	33	19.0	29	33.0
No difference	45	25.9	19	21.6
Total	174		88	

As shown in Table 9, more than 80% of HSS students (133 of 157 [84.7%]) were short commuters (HSS short commuters), while more than 60% of NS students (64 of 105 [61.0%]) were long commuters (NS long commuters).

Table 9. Respondent attributes according to major and commuting time (*n* = 262).

	Major				
	Humanity and social sciences		Natural sciences		
Commuting time	Number	%	Number	%	Total
Less than an hour	133	84.7	41	39.0	174
More than or equal to an hour	24	15.3	64	61.0	88
Total	157		105		262

Most HSS short commuters (73 of 133 [54.9%]) preferred face-to-face classes. In contrast, more than 60% (15 of 24 [62.5%]) of HSS students with commuting time more than or equal to an hour (HSS long commuters) preferred remote classes. More than 70% (31 of 41 [75.6%]) of NS students with commuting time less than an hour (NS short commuters) preferred face-to-face classes, while most NS long commuters (33 of 64 [51.6%]) preferred remote classes (Table 10).

Table 10. Face-to-face vs. remote classes: student preferences according to major and commuting time (*n* = 262).

Do you prefer face-to-face or online classes?	Major							
	Humanity and social sciences				Natural sciences			
	Commuting time				Commuting time			
	Less than an hour		More than or equal to an hour		Less than an hour		More than or equal to an hour	
	Number	%	Number	%	Number	%	Number	%
Face-to-face classes	73	54.9	9	37.5	31	75.6	31	48.4
Remote classes	60	45.1	15	62.5	10	24.4	33	51.6
Total	133		24		41		64	

As shown in Table 11, most HSS long commuters (14 of 24 [58.3%]) indicated that remote classes better promoted their understanding of lectures, compared with face-to-face classes. In contrast, most HSS short commuters (72 of 133 [54.1%]), NS short commuters (24 of 41 [58.5%]) and NS long commuters (36 of 64 [56.3%]) indicated an opposite effect.

Table 11. Face-to-face vs. remote classes: understanding of lectures according to major and commuter time (*n* = 262).

Do face-to-face classes or remote classes better promote your understanding of lectures?	Major							
	Humanity and social sciences				Natural sciences			
	Commuting time				Commuting time			
	Less than an hour		More than or equal to an hour		Less than an hour		More than or equal to an hour	
	Number	%	Number	%	Number	%	Number	%
Face-to-face classes	72	54.1	4	16.7	24	58.5	36	56.3
Remote classes	27	20.3	14	58.3	6	24.6	15	23.4
No difference	34	25.6	5	25.0	11	26.8	13	20.3
Total	133		24		41		64	

3.2.3 Discussion

The results of the questionnaire survey revealed some changes in the higher education and learning environment in Japan due to the COVID-19 pandemic. Although most respondents (144 of 262 [55.0%]) tended to prefer face-to-face classes, a large number of respondents (118 [45.0%]) preferred remote classes. It is unlikely that many students would have wanted remote classes if the COVID-19 pandemic had not occurred. Some respondents who preferred remote classes recognised their benefits, such as the absence of a long commute, which may have enabled students to effectively use their time or reduce their physical burden. This was an important factor that influenced respondents' attitudes towards the lecture format.

Contrary to the authors' expectations, there was no statistical evidence that a respondent's major exerted a significant effect on the preference for face-to-face or

remote classes, or on the perception of which format promoted a better understanding of the lectures.

Most HSS long commuters indicated that remote classes better promoted their understanding of lectures, compared with face-to-face classes, whereas NS students indicated that face-to-face classes better promoted their understanding of lectures regardless of commuting time. However, it is difficult to generalise these findings due to the small sample size of the survey. Further questionnaire surveys and follow-up interviews are needed to confirm students' attitudes towards face-to-face and remote teaching formats.

4 Concluding remarks

Because Japanese students had an unprecedented stressful experience in recent years, they were expected to prefer a return to their pre-COVID-19 lifestyle. However, the results of the questionnaire survey suggest that they recognise the benefits and limitations of the new normal with COVID-19. We may be in the midst of a transformation into a new normal educational and learning environment after the COVID-19 pandemic. The attitudes towards education and learning that developed in higher education students, as well as primary and secondary education students, during the COVID-19 pandemic must be considered in efforts to maintain high-quality education at all educational levels.

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13

DR. MONTSERRAT SANTAMARÍA VÁZQUEZ & DR. VANDA VARELA PEDROSA

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Long term international collaboration: from teaching to research

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Abstract. The text reports the experience of international collaboration between the universities of Burgos (Spain) and the School of Health Sciences Polytechnic Institute of Leiria (Portugal), during 6 academic years till now. What began as a teaching experience has led to joint research and has yielded results that make worth continuing the collaboration.

Throughout these six years, 3 final degree projects have been carried out, 12 students have been involved through these projects, 2 research and teaching exchanges between the teachers involved, 4 presentations at conferences and the creation of a common line of research, which we hope will give more results.

We would also like to highlight how enriching the experience has been and how, thanks to it, lectures involved have learned, not only on a professional level, but also on a personal dimension, acquiring new skills and making real the concept of lifelong learning.

Keywords: International teaching/research experiences, Interchange mobility programs, Inter-disciplinary lectures, final project degree.

1 Introduction.

The concept of lifelong learning emerged in the 1970s at the hands of UNESCO, but it is in the 1990s that it gained importance on our continent thanks to the declaration of the "European Year of Lifelong Learning". In this framework, lifelong learning is defined as: "All learning activity undertaken throughout life, which results in improving knowledge, know-how, skills, competences and/or qualifications for personal, social and/or professional reasons " (CEDEFOP, 2014, p.77).

This lifelong learning can take place in formal and informal contexts, as the concept itself includes a perspective related to the acquisition of skills and competences, not only professional, but also personal (Dávila Heitmann, 2013). As university lecturers, we exercise our profession within the context of regulated and therefore formal education, and we are presented with opportunities to teach adults, through the different educational programmes that universities offer to society. However, despite the offers of continuous training that we receive from our universities, we are reluctant to participate in that kind of training that aims to improve our skills in order to better adapt to the new demands of teaching and research. But what about our lifelong learning related to personal skills?

On the other hand, the university has not been oblivious to the processes of globalisation, the advance of technology and the increase in interconnection between people and countries and has made internationalisation one of the cornerstones of its

policies. According to Delgado-Márquez et al. (Delgado-Márquez et al., 2011), the concept of internationalisation includes several perspectives, among which are the activity-centred perspective (focused on participation in activities that promote student and teacher exchange), the competition-centred perspective (focused on acquiring important values to be competent in the global market), the ethos perspective (creation of intercultural culture) and the process perspective, which tries to integrate the international dimension in both teaching and research. According to this perspective, the emphasis is not on mobility, but rather on the development of international and intercultural competences. Especially important after the process of Pandemic period by Covid-19.

Considering both the perspective of lifelong learning, focused on the skills of university professors, and the perspective of internationalization as a process, the aim of this contribution is to present an experience of collaboration between the School of Health Sciences of Polytechnic Institute of Leiria (Portugal) and the Burgos University (Spain), based on the implementation of a project between the two institutions, and articulated through students as part of the completion of the final degree project from Bachelor´s Degree in Occupational Therapy.

2 Development.

The methodology chapter was divided into four different work packages, developed over the years.

2.1 Work Package 1. Starting collaboration.

The present experience started in course 2016-2017. From this moment till now, several groups of students from the Occupational Therapy Course of Health Science Schools of Leiria (ILP) and students from Burgos University (UBU) have worked together, but also teachers from both institutions.

In the aforementioned course, students from both universities showed interest in research related to Breast Cancer, more specifically on what role can Occupational Therapy play with women diagnosed with Breast Cancer, especially those survivors of this diagnosis.

It is still an unknown topic throughout the intervention process, especially with emphasis on a correct assessment that certainly impacts the intervention that is carried out. Of the various studies carried out, the intervention of Occupational Therapy with women survivors of Breast Cancer, highlighting the adequacy of the assessment, has not been the object of much scientific investigation, especially in countries such as Portugal and Spain, often leaving a void in the monitoring, a professional area that is still very much at the mercy of assessment instruments, many of them outdated and poorly adjusted to the current reality, for the respective national realities.

This is the starting point of this experience. The activities carried out are shown below in a timeline (figure 1).

The research work was carried out over 2 academic years (2016-2017 and 2017-2018). During the first year, students from IPL designed the research protocol centered

in the Assessment and Intervention in Occupational Performance Deficit in Women with Breast Cancer; while students from Burgos, collected data from Spanish Population. The second year the same students continued the process, and IPL students ended the final project degree with a presentation that is made annually in the form of Internal Occupational Therapy Meeting in Leiria.

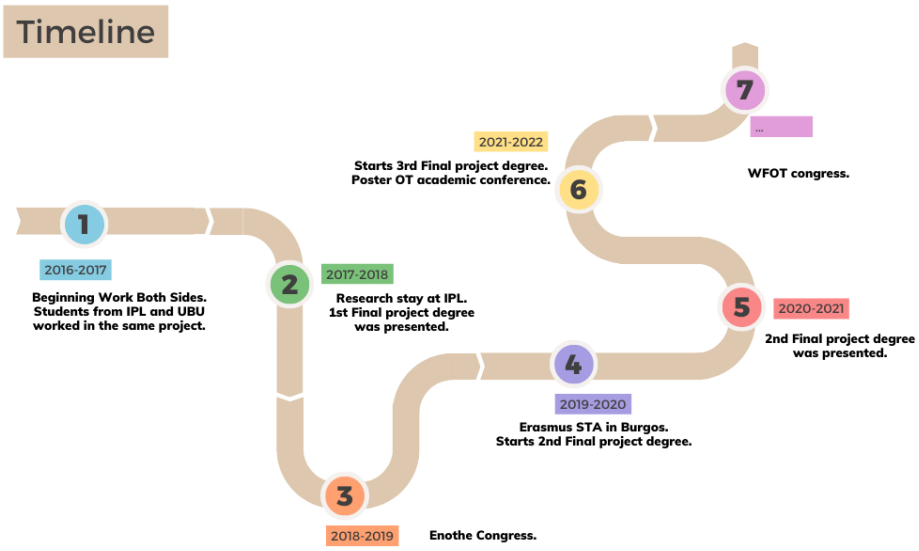

Fig. 1. Timeline of the collaboration.

2.2 Work Package 2. Erasmus experiences (from side to side)

After initiating this first collaboration between students from both universities, the following academic years (2017-2018 and 2018-2019) the professors involved carried out exchange activities.

From February 2018 to June 2018, a research stay was carried out at the ILP, with the aim of advancing the research initiated with students from both institutions in the previous academic year. This stay helped to establish the collaboration and create a longer-term collaborative project.

In the 2018-2019 academic year, the exchange went in the other direction, and through a teaching mobility in the Erasmus framework, it was possible to transfer to the Spanish students a new experience of internationalisation, since classes and seminars were given showing the reality of the work of the occupational therapist in Portugal.

2.3 WorkPackage 3- Final projects degree and stabilization of the collaboration

The next academic years, students continued being involved in different works and final project degree. During 2019-2020, a second group or three students from IPL, designed the project: Identification of Deficits in Occupational Performance in Women After Breast Cancer: Development of an instrument to assess the implications for occupational performance in women with breast cancer; this same group in 2020-2021 collected data from the Portuguese sample and analysed the respective analysis,

preparing an article for publication and presentation at conferences. They obtained the collaboration of Portuguese women from all over the mainland and islands.

The third group of students were involved in the process, in present academic year and in the next, 2022-2023. They submitted a final proposal they want to carry on under the name: The Impact on Occupational Performance of Women Breast Cancer Survivors. They will collaborate with the main group of Investigation.

2.4 WorkPackage 4- Concerning dissemination

This experience would not be the same, without having considered the diffusion.

Result of the first final project degree in course 2017-2018, the ILP students also made one submission at the 24th European Network of Occupational Therapy Education (ENOTHE) Annual Meeting, held from the 4th to the 6th of October of 2018, in Cascais, Portugal under the theme: *Students perspective of an international research cooperation*. This presentation is especially important because, highlights the fact that the students were very involved throughout the process, and that they themselves mentioned that this intercultural experience and with both countries collaborating was very important for their learning, and future competencies.

On the other hand, the lectures involved also presented one oral communication at the same congress, with the title *"International collaboration: What teachers can learn"*. The presentation highlights the very relevant aspects from our joint perspective. Continuous learning as key point, not only for students and practitioners, but also for teachers (lecturers). These learnings cannot be unaware of the fact of belonging to an increasingly globalized world, and the importance of researching within universities.

The data from the second final project degree has been presented at the academic conference of occupational therapy in June 2022 and also has been accepted at the Word Federation of Occupational Therapy (WFOT) Congress which takes place in August 2022.

Nowadays, lectures are working in the analysis of all the date collected during these years, and are preparing several papers.

3 Results

It is difficult to quantify the results of this experience, but mainly because the most valuable results are those based on the personal experiences of the students and lecturers.

In an attempt to point out some quantitative data, we summarize the number of academic courses, six at this time; the number of final project degree carried out, three; the number of students involved, ten for Leiria and two from Burgos; two stays, one in each country; four approved submissions with presentation in international congress (figure 2).

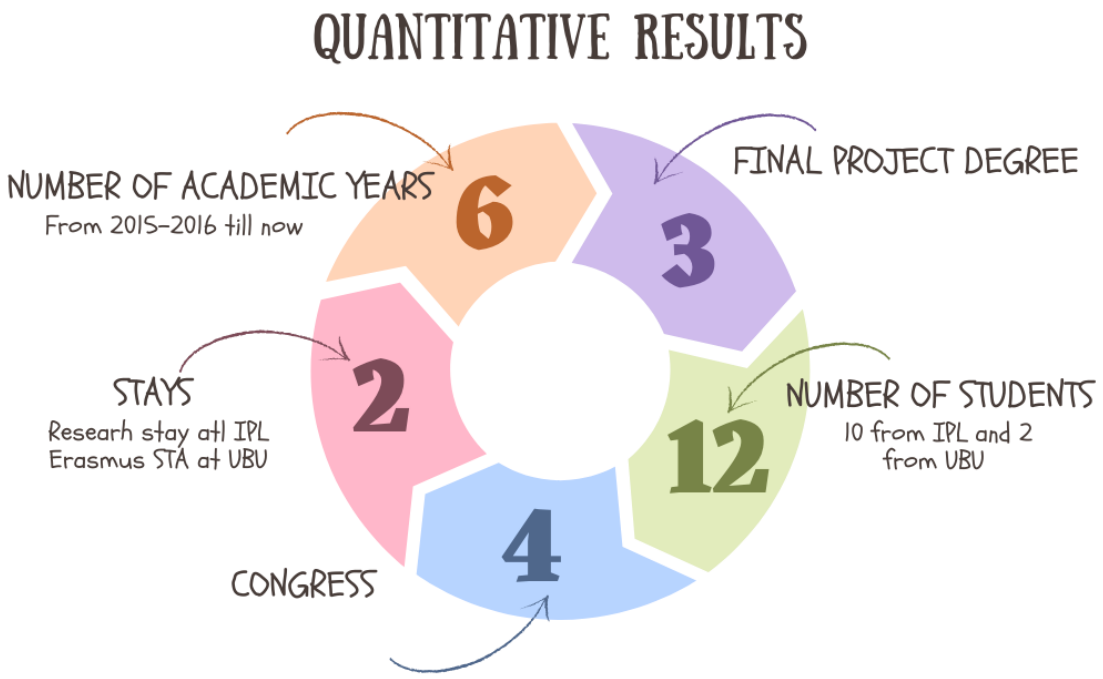

Fig. 2. Quantitative results.

About qualitative results, they are presented from the perspective of students and lecturers.

Students from IPL, gave their opinion about the experience: "*This Work allowed us to explore new ways of acting in the European space, reporting the valuable addition of being arranged in an Iberian level, to develop scientific knowledge in an area that it lacks: Intervention of OT in women with Breast Cancer and helped us being agents that cross barriers representing where the OT past meets the OT future. As future occupational therapists, we want to inspire the concomitant research with the outside world, prospecting the future. This oral communication reports the typology of working together, as a team, deliberating our partnership as an example of cooperation. The partnership is a commitment procedure to achieve a common objective, as such, all partners conjointly decide the planning and execution of the project: each part of the partnership has autonomy and due responsibility. To increase the development and*

research in OT, it is very important to improve the professional relations and partnerships".

According to teacher's perspective, we described the experience as enriching and challenging. Obviously, it requires greater involvement, but the results are worthwhile.

Related to academic stays we can highlight the opportunity of sharing different topics related to occupational therapist performance, as Palliative Care, Health Management and Economics, Support Products and Intervention of Occupational Therapy in the Community from the respective of how it works in Portugal and establishing consonances and dissonances between the two countries. Know how it develops in the other country contributes to a better comprehension of Occupational Therapy. These exchanges, also allow to visit different kind of facilities and learn about other institutions work.

4 Final reflections and future ideas

Thinking retrospectively, this collaboration was decisive for the understanding of the path taken as well of what we lived, which is very good for individual and collective knowledge.

This sharing helps to synthesize what was and what could be a successful partnership of Erasmus over the years, an experience that has been going on for a long time, from 2016 until now and who knows for how long.

This was a process that started, but it seems that it never ended, and the fact that we are doing this joint writing is proof of that, that the process continues and seems to keep growing. This joint exercise with a colleague from a different university, from a different country, where we have to incorporate different concepts and knowledge, is extremely valuable to us. It has been decisive to improve our qualifications, skills, training, in line with what is internationally recommended (OECD, 2020).

Our CV has become richer, more comprehensive, and has brought us a collaborative vision and practical experimentation that, until then, we did not have, both from the perspective of a teacher and from the perspective of the student who, and since 2016, have been involved in the work developed in partnership. Reflective practice on international peer collaboration issues, involving students in the activities done, has become a valuable learning experience (OECD, 2020).

As future ideas, it would be interesting to create mixed groups of students from both universities in order to enhance the international experience among them. It would be also worthy establish a formal Collaborative Online International Learning (COIL) program.

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13

DR. JAN STROHSCHEIN

Dr. Jan Strohschein *is a German computer scientist who completed his doctoral thesis with the title "Big Data Reference Architecture for Industry 4.0 - Including Economic and Ethical Implications" in a cooperation between the Universidad de Burgos and the Technische Hochschule Köln. During his doctorate he traveled between both countries and worked in interdisciplinary teams in Germany and Spain. After the successful completion of his PhD Jan started working as IT expert for the German government where he currently develops a software system for crisis prevention.*

¡A España!

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Abstract. I was able to conduct my PhD research at Universidad de Burgos in cooperation with Technische Hochschule Köln in the intersection of several innovative fields, e.g., manufacturing, big data and artificial intelligence. My thesis motivates the need for a Big Data architecture to apply artificial intelligence in Industry 4.0 and presents a cognitive architecture for artificial intelligence – CAAI – as a possible solution, which is especially suited for the challenges of small and medium-sized enterprises. The following sections will detail my work in the research project and the journey as a German PhD student traveling to Spain and around the world.

Keywords: Industry 4.0, Artificial Intelligence, Big Data, Cyberphysical Production Systems, Software Architecture.

1 My journey

After I finished secondary school, I was not sure, whether to study engineering or computer science as I was passionate about both. I enrolled for an engineering program in the RWTH Aachen. However, after the first few semesters we started programming our own algorithms to dynamically solve the problems and find optimal solutions in the logistics course. In that moment I knew that I needed to switch programs. I changed not only the program but also the type of university and enrolled for computer science at the Technische Hochschule Köln, a so-called "university of applied sciences", and I enjoyed computer science and the more practical approach immensely. I completed my Bachelor and Master degree in computer science while working as a research assistant for the department of computer science during the school year and as a working student in an engineering department at Bayer during the holidays. After I concluded my master thesis in the same department at Bayer, I was offered the opportunity to write a doctoral thesis by my supervisor and mentor Dr. Heide Faeskorn-Woyke. Several professors and research assistants worked on a proposal for a new research project that introduces machine learning and artificial intelligence in the field of manufacturing through Industry 4.0 and I would work with two other PhD students in an interdisciplinary team, which sounded amazing to me. The long-established international cooperation between Technische Hochschule Köln and Universidad de Burgos introduced me to my future thesis directors Dr. Ana María Lara Palma and Dr. Joaquín Antonio Pacheco Bonrostro. Thus, I was able to start my PhD studies at Universidad de Burgos in December of 2017 and work in the research project "KOARCH", that was funded by the German Federal Ministry of Education and Research (BMBF), in April of 2018. My first visit to Burgos and the beautiful campus of Burgos University was through an Erasmus staff mobility in February and March of 2018 and I was welcomed with open arms by Professor Lara Palma, Professor Pacheco Bonrostro and their respective teams.

Fig. 1. Burgos University Campus.

During the following weeks we finalized all the bureaucracy for the joined supervision of my thesis through both universities and prepared my research plan for the following years. Each year this plan would be updated with current achievements and more granular planning for the future. The thesis directors evaluated the progress each year to ensure the direction and pace of the thesis. The research plan considered the long-term goals, e.g., publications and the thesis, as well as short-term goals such as presentations on conferences in the coming months. The first conference I would attend was the Ethicomp, a well-established conference on the ethical impact of computing. In September of 2018 the conference took place in Sopot, Poland and I was given the opportunity to present two of our papers and act as a session chair to guide the discussion. The first paper had the title "Homo-Cyber-Connecticus: Atapuerca and the Moral Dilemmas beyond Fitness Wearables" (Lara-Palma et al., 2018) and the second paper was called "Free Will or Freiwild" (Strohschein et al., 2018). Both regarded the aspects of data privacy in modern technology and the possible impacts on the individual. During my stay in Poland, I was also able to visit the old town of Gdansk with the other participants, which was especially dear to me, as my grandfather was born in Gdansk but I had never been there before.

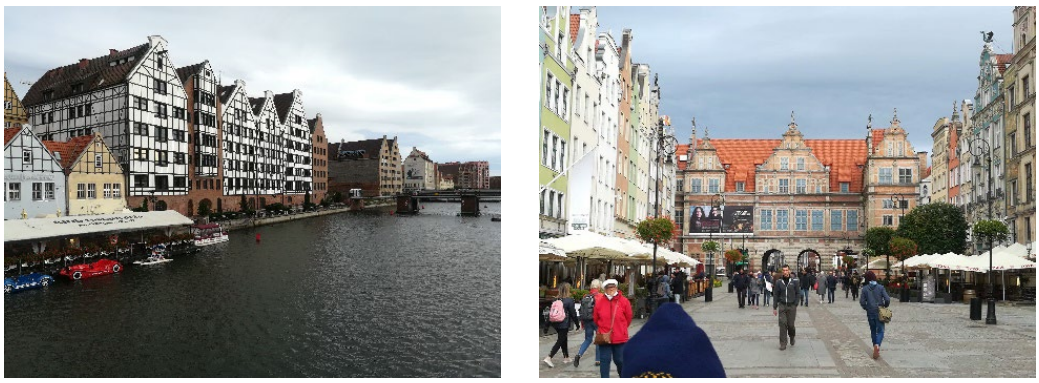

Fig. 2. Gdansk Old Town.

In October of 2018 another very exciting research project was founded at the Burgos university and I was allowed to participate. It was called "Somnia Tec"[4] and the researchers worked together with medical professionals on a serious game to improve the participants health through better sleep. It was very interesting for me to exchange thoughts on the development process with the participating researchers. The project was successfully concluded in March 2020 and the game was licensed to Gallardo & Murillo. In the meantime I also continued to work with my fellow german PhD students on our Industry 4.0 research project and we were able to present our first draft of an architecture that would introduce artificial intelligence into manufacturing in May 2019 at the "Digital Xchange" conference in Germany. An architecture describes an abstraction of concrete systems. It captures the "idea" of a system and supports the design of complex software systems. The result is an implementation guidance and a set of best practices that allows to build a software system while re-using common software building blocks. It works like a blueprint for a domain-specific class of systems.

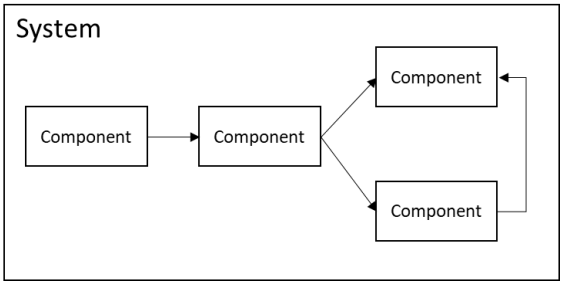

Fig. 3. Architecture example.

The summer of 2019 was intense and filled with a lot of preparation for the upcoming conferences and the second mobility to Burgos. My journey started on 02.09. towards Tokyo, Japan. There I presented the paper "Detecting emotions in social media. A technological challenge to enhance youngest behavior" (Strohschein et al., 2019) at the European Academy of Management and Business Economics conference held at the Meiji university. The paper showcased the technical platform of the new architecture, even though in a social science and not in an Industry 4.0 context. We collected data of Twitter users and used a language model based on the emotion modeling of Paul Ekman to analyze the expressed emotions and the emotional development of the users over a time period of five years.

[4] https://www.ubu.es/noticias/somnia-tec-videojuego-disenado-para-la-estimulacion-del-sueno

Fig. 4. Visiting the Asakusa Shrine, Tokyo (2019).

Fig. 5. Meeting Dr. Lara Palma at Meiji University, Tokyo (2019).

Even though I was just two days in Tokyo I was still able to meet up with dear colleagues and experience a bit of the rich culture visiting the Asakusa shrine and making my way through several city districts. After my short visit to Japan, I was home for just a few days and a quick celebration of my birthday on the ninth of September before traveling to Zaragoza to attend the IEEE International Conference on Emerging Technologies and Factory Automation from 10/09/2919 to 13/09/2019.

Fig. 6. Zaragoza Old Town.

Fig. 7. Zaragoza University.

There I presented the paper "Evaluation of Cognitive Architectures for Cyber-Physical Production Systems" (Bunte et al., 2019) with my fellow PhD students Andreas Bunte and Andreas Fischbach. The paper presented the results of our evaluation regarding the applicability of proposed reference architectures for the design and implementation of Industry 4.0 software systems. We compared reference architectures from two different fields, cognitive science and manufacturing, which possess very different properties. However, none fulfilled all requirements for our use cases which is displayed as the "Gap" in Fig. 8. The goal was to develop an architecture with a low level of abstraction, that actively guides the software developer during implementation, but with enough generalizability to enable usage in many different scenarios.

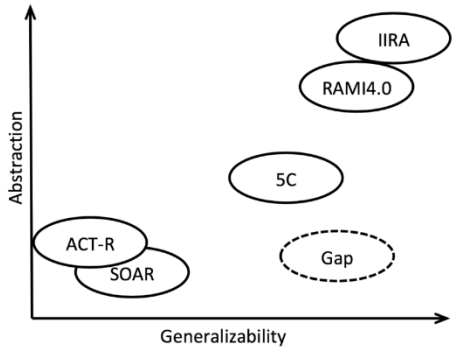

Fig. 8. Architecture evaluation for Industry 4.0 software systems.

After the end of the conference, I said goodbye to my colleagues and took the bus from Zaragoza to Burgos for my teaching mobility. In the coming few weeks, I had another opportunity to work with the research groups in Burgos and held guest lectures for engineering students on the topic "Introduction to Industry 4.0 and Artificial Intelligence" before I returned to Germany at the beginning of October. At the beginning of 2020 the Covid19 pandemic started to spread around the globe. Even though I was blessed and my family stayed healthy throughout the pandemic, it also heavily influenced the remaining time of my PhD studies. At the time we were just preparing a questionnaire to get insights into small and medium sized companies in the manufacturing sector and their technology adaption but suddenly most companies shut down production and closed their offices. Universities in Germany also stopped any activities on campus and everything from teaching to project meetings was done virtually. Through close cooperation with my thesis directors and their workgroups it was possible to get in contact with small and medium sized manufacturing companies in Germany and Spain to conduct the questionnaire, even in those tough circumstances. Conferences also turned into virtual events and I was selected to be an organizing committee member for the Ethicomp in June of 2020. The conference developed the interesting concept to pre-record the talks and then hosting just the discussions about the topics so that each participant could watch the presentations on their own schedule. There I could display the results of the questionnaire in a presentation with the title "Employee technology acceptance of Industry 4.0 in SMEs" (Strohschein et al., 2020). During Covid19 I also continued the work on the German research project KOARCH with my fellow PhD students and continuing the architecture evaluation we were able to present our own architecture in the publication "CAAI - A Cognitive Architecture to Introduce Artificial Intelligence in Cyber-Physical Production Systems" in the International Journal of Advanced Manufacturing Technology (Fischbach et al., 2020) in October of 2020. CAAI consists of a big data platform designed to operate on edge devices, company servers or the cloud. The modular architecture, as shown in Fig. 9, provides a set of re-usable software building blocks to easily adjust the architecture for new use cases and additional algorithms. The cognitive module learns from the production data which algorithms are suitable for a given use case and switches the decision-making algorithm during production if the additional data leads to better results with another algorithm.

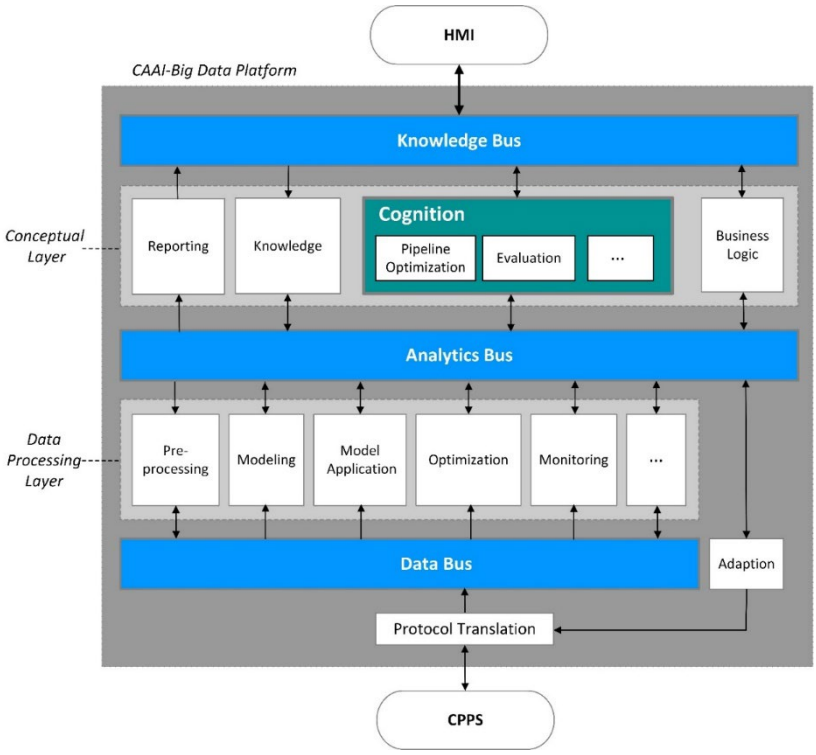

Fig. 9. CAAI Architecture for Industry 4.0 software systems.

We continued the work on the CAAI architecture, as we wanted to improve the cognitive module to schedule its own experiments on the computing cluster in the search for the optimal algorithms for a use case. A knowledgebase contains information about available algorithms and the cognitive module would use a simulation stage before the actual production to select promising candidate algorithms. The results were published in another publication with the title "Cognitive Capabilities for the CAAI in Cyber-physical Production Systems" in The International Journal of Advanced Manufacturing Technology (Strohschein et al., 2021). However, the review and publication process were also slowed down during Covid19. As a result, the work was no longer published in 2020 but only in June of 2021.

All this previous work has also been incorporated into my doctoral thesis which I completed in December of 2020. In this work I explored both the ethical and financial impacts of these new technologies and highlight the benefits but also the challenges for countries, companies and individual workers with literature reviews and the findings from the questionnaire. I also presented several implementations of the architecture which have been published as an open-source software project for further use. The following thesis defense on 06.05.2021 was also done in a virtual setting because of the still ongoing pandemic. On this day I graduated "cum laude" through the support from my thesis supervisors, my fellow PhD students and my lovely wife. I am grateful to all of them and could not have completed this journey without them.

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CONCLUSION

The narratives shared in this collective work serve to build a richer and more collaborative academic framework.

Each chapter brings together several key elements in the current international context: the use of a common language on the international scene (English), the enrollment of teachers, students and associated collaborators (interdisciplinarity) and the setup of heterogeneous teams to achieve of a common final objective (sub-specialization).

Taking this into consideration, each author contemplates the specific part of which it is a specialist, hence adding a higher level of resolution and quality in the results. And it is precisely these elements the ones with which we want to enhance the training of students, thus adapting the educational reality of the Burgos University to a professional panorama open to internationalization and competitiveness.

As a university institution, we have the challenge to keep transferring value-added knowledge to society. Students are our main value, our priority and the reason why we need to empower our transdisciplinary educative innovation.

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