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EDITORIAL

This edition of SPACE’s Journal is also dedicated to the last year conference with the theme: “Fostering social impact by linking HEI research to entrepreneurship”.

Entrepreneurship is one of the European transversal priorities since it’s a subject that gives differentiating competences and skills to prepare students for the labour market. To the European Union, entrepreneurship is related to the individual ability to turn ideas into actions, where this ability is linked to creativity, innovation and risks acceptance, as well as the ability of planning and project management, in order to achieve goals. The entrepreneurship concept has always a reference to the attitudes towards the environment and its response capacity in the sense of constructing solutions that add value to the society.

The role of entrepreneurship in terms of the economic development has been recognized by several theorists over time and is related to the call for bigger and better business skills in order to face growing challenges and uncertainty of the future. These entrepreneurial competences are more and more needed to sustain development and innovation and consequently the economic growth. The entrepreneurship education is seen, today, as a way to contradict the social apathy and economic deacceleration of our society.

Higher Education Institutions have been incorporating these transversal competences in the curriculum and teaching and learning methods, so students have a more adequate response of the society needs and contribute to its sustainable social and economic development.

Therefore, is obvious, the importance of this thematic and a analysis and discussion was imperative to enhance the role of HEI in contributing for a better society. The papers presented here shows a part of the contribution held at the last year conference.

Teresa Paiva
(Editor-in-Chief)
DEVELOPMENT OF STUDENTS’ INTERCULTURAL COMPETENCIES ON HIGHER EDUCATIONAL INSTITUTIONS

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Abstract: The research project has mapped the intercultural competencies for students started on the Marketing Management study IBA in Kolding in September 2016. The student’s intercultural competencies were measured at the start of their studies on the 1st semester in September 2016, in the middle of the 2nd semester in April 2017 and at the end of the study on the 3rd semester in October 2017 before the students goes on their internship and writes their main thesis on the 4th semester.

Methodically knowledge of the students’ intercultural competencies was obtained through the use of a longitudinal quantitative study, where students who had study start on the autumn semester in 2016 have got their intercultural competencies measured over a longer period of time: At the start of studies in September 2016; After 1 year of study in April 2017; Before internship on the last semester in October 2017.

The concept of intercultural competencies used in the research project is Earley and Ang’s [1] widely accepted concept for CQ (Cultural Intelligence).

The measuring instrument associated with Earley and Ang’s concept [1] is The Cultural Intelligence Scale (CQS), which consists of 20 elements divided into 4 categories: Metacognitive CQ, Cognitive CQ, Motivational CQ and Behavioral CQ [2]. The measuring instrument CQS is used in this research project.

A total of 224 students started on their study in September 2016 and of these 55 students completed all three measurements. Thus, the data basis in the research project is 55 students, divided among 19 students in pure Danish classes and 36 students in international classes. Students in the international classes came from different countries. They had in common that they have chosen to take their education in Denmark and they typically moved to Denmark in connection with the study start.

The data for the Danish and international students were analysed separately. The results should be read with the fact in mind that the international students have chosen to move to another country and thus another culture to take their education. This may be a positive attitude towards meeting cultures.

The research project shows that the student’s intercultural competencies do not change significantly during their study. Thus, there is a minimal progression of 1.94% for the Danish students and 0.89% for the international students. We, as an educational institution, cannot be satisfied with this. In view of our commitment to the receivers of our students - private and public companies, which are increasingly involved in collaborative relationships internally and
externally across nationalities and cultural understandings, we must see developing the student's intercultural competencies as part of our curricula. This is not something we are committed to in accordance with the curriculum for the Marketing Management study, where there is only a requirement for the student to have knowledge and understanding of cultural values and cultural behaviour, including cultural barriers (IBA, 2016).

The cognitive part of intercultural competencies is thus embedded in the curriculum and covers the academic part of the cultural concept and the importance of culture in relation to creating constructive relationships. The social part lies in the application level, in which the student must have the willingness and ability to constructively engage in relationships across cultural differences.

Compared with the Danish students, the international student's intercultural competencies are approx. 8% higher than the Danish student’s intercultural competencies. There cannot within the framework of this research project be given a concrete bid for what the reason for this difference is.

Although there is only a minimal progression in the student's intercultural competencies during the course of study, this covers differences in the development of the intercultural part competencies during the course of the study: Metacognitive, cognitive, behavioural and motivational intercultural part competence.

The cognitive intercultural part competence increases 7.5% for the Danish students and 4.3% for the international students during their study. This intercultural part competence deals with the level of knowledge one has about cultural differences and about one’s own position as part of the cultural environment.

The metacognitive intercultural part competence increases 2.1% for the Danish students and 2.8% for the international students during their study. The metacognitive intercultural part competence deals with the ability to be reflexive in the intercultural situation - to be able to understand that one’s own frame of reference is influenced by one’s own cultural point of view and that the others have a different frame of references.

The intercultural part competence motivation is in contrast to the intercultural part competencies cognitive and metacognitive falling during the course of the study. The fall is 2.6% for the Danish students and 3.4% for the international students during their study. The motivational intercultural part competence is about the motivation of the individual to learn about and function in intercultural situations.

However, the increase is less than the intercultural part competencies cognitive and metacognitive. The increase is 2.4% for the Danish students and a minimal increase for international students of 0.4% during their study. The behavioural intercultural part competence deals with the ability to translate cultural knowledge and apply cultural reflexivity to create better intercultural relationships.

The research project also examined whether there is a correlation between intercultural competencies and gender. Here the project shows that there is no significant difference between the intercultural competencies of male and female students at the start of the study. However, the students develop differently during the course of the study. Thus, the intercultural competencies of female students increase during the course of the study, while the intercultural competencies of male students decrease during the course of study.

Keywords: Intercultural competences; Metacognitive, cognitive, behavioural and motivational intercultural part competence.
1. Introduction

Business Academies collaborate closely with business to educate young people to be able to respond to a labour market that is highly characterized by cooperation across nationalities and cultural understandings. The young people must be prepared to enter the labour market, which contains a professional part as well as a personal and social part. In Denmark, small and medium-sized companies find it difficult to enter growth markets, and its especially language skills and cultural differences that give rise to problems.

It is a core task for Business Academies to address this challenge. In order to be able to work seriously and purposefully with the development of students’ intercultural competencies, we need knowledge about the students' current intercultural competencies. As educational institutions, we must get knowledge about how we can create progression at the students, going from knowledge of intercultural competencies to the active use of intercultural competencies in interaction with other cultures.

The knowledge level is embedded in the curriculum and covers the academic part of the cultural concept. The social part lies in the application level, in which the student must have the ability to constructively engage in relationships across cultural differences.

In this research project, progression in Business Academy students' intercultural competencies will be illuminated from start of their study until end of their study.

The aim is to contribute with knowledge that Business Academies as well as other higher educational institutions can use to ensure a controlled progression in students’ intercultural competencies through their study, so that companies recruiting graduates from the educational institutions hires employees who can cooperate with companies, organizations and people from other countries and cultures in a globalized labour market.

This is achieved by
1. Measuring student's intercultural competencies at the start of the study, during the course of study and at end of the study.
2. Investigating whether there is a correlation between students’ intercultural competencies and gender and experience in interacting with people from other cultures.

2. Methodology

Knowledge about students' intercultural competencies was methodically obtained through the use of a longitudinal quantitative study, where students with
study start in the autumn semester 2016 have got their intercultural competencies measured over a longer period of time:

• At the start of studies in September 2016
• After 1 year of study in April 2017
• Before the internship on the last semester in October 2017

Based on a literature research, the understanding framework of intercultural competencies in the research project was determined and measurement tools were selected.

A pilot survey was launched in February 2016 for students with study start in the spring semester in February 2016, where typically significantly fewer students start than in the autumn semester in September. The purpose of the pilot measurement was to minimize inappropriateness in measurement design by evaluating the pilot measurement and adjusting the measurement tool.

The measurement of the student’s intercultural competencies has been done with the CQS measurement tool, which is a recognized test for measuring intercultural competencies. The test, that can be used for research purposes, has been found reliable, stable and valid across sampling, time, countries (cross-validated in the US and Singapore) and methods (self and peer ratings).

3. Choice of concept for intercultural competencies and measurement tool

Based on the completed pilot measurement in February 2016, it was decided to use Earley and Angs [1] widely accepted concept for CQ (Cultural Intelligence).

They define CQ as "a person's ability to adapt to new cultural contexts" [1] (p. 59). According to Earley and Ang [3] (pp. 582-602), CQ builds on various non-academic intelligences such as social intelligence, emotional intelligence and practical intelligence [3] (p. 583). The special feature of CQ is that it focuses on a specific domain, "intercultural settings", and that there with CQ is being worked with the practical reality of globalization [3] (p. 583). The concepts CQ and intercultural competencies are comparable, and both explain differences in dealing with cultural diversity and in acting in new cultural environments. CQ has 4 dimensions: Metacognitive dimension, cognitive dimension, motivational dimension and behavioural dimension:

• Metacognitive CQ is about the mental capacity to acquire and understand cultural knowledge. People with high metacognitive CQ continuously question their own cultural assumptions, reflect during interaction, and adjust their cultural knowledge when interacting with people from other cultures [4].
• Cognitive CQ is about knowledge about culture. People with high cognitive CQ have great cultural knowledge and knowledge about cultural
surroundings. This also includes knowledge of self as embedded in the context of the cultural environment [4].

• Motivational CQ is about the motivation of the individual to learn about and function in intercultural situations. People with high motivational CQ direct attention and energy to intercultural situations based on intrinsic interests. Motivational CQ is the source of action in relation to intercultural situations (Ang & Van Dyne, 2008, p. 6).

• Behavior CQ is about the ability of appropriately verbal and nonverbal action in intercultural situations. When individuals are part of face-to-face interactions, they do not have access to the other thoughts, feelings or motivations. Here they should be able to interact with the other’s voice, face and other expression [4].

The measuring instrument associated with Earley and Ang's concept [1] is The Cultural Intelligence Scale (CQS), which consists of 20 elements divided into 4 categories: Metacognitive CQ, Cognitive CQ, Motivational CQ and Behavioural CQ (The Cultural Intelligence Centre, 2005). In a study that reviews 10 widely used tests for measuring cross-cultural competence, conducted by Matsumoto & Hwang [5], it is concluded that three tests, where CQ is one, has the most promising evidence for assessment of Cross-Cultural Competence [5]. The test (The Cultural Intelligence Centre, 2005) can be used for research purposes, and this instrument is used in this research project for measuring intercultural competencies.

4. Findings

4.1. Overall intercultural competence

The Danish students’ intercultural competencies show a smaller increase during the study from the 4.67 at the start of their study to 4.76 at the end of their study equivalent to 1.94%.

Similarly, the international students’ intercultural competencies also showed a slight increase during the study from 5.07 at the start of their study to 5.12 at the end of their study equivalent to 0.89%.
One of the hypotheses in the research project was:

At IBA in Kolding, where the measurements are carried out, there is a multicultural study environment due to a large proportion of international students. The students thus interact inter-culturally during the study, and my hypothesis is that this will develop their intercultural competencies and that there will be a progression during the course of study so that the student's intercultural competencies will be bigger at end of the study than at the start of the study.

The research project confirms the hypothesis, however, progression in the student's intercultural competencies is minimal during the course of their study. In view of the fact that the study environment at IBA in Kolding is highly multicultural, it is surprising that the progression during the course of the study is minimal.

The second of the hypotheses in the research project was:

Seen in the light that there in Danish classes not are international students and that teaching takes place in Danish, my hypothesis is that students in international classes due to their daily multicultural study interactions will experience a greater progression than students in Danish classes.

The research project rejects this hypothesis. Although progression is minimal, there is a greater progression in Danish students’ intercultural
competencies than in international students. However, progression is so minimal that no further conclusions can be drawn from this.

As shown in the figures, there is a pattern when considering the difference between the international and Danish students in the four-part competencies. The intercultural part competencies cognitive and metacognitive are thus significantly higher for the international students.
than for Danish students, both at the start and end of the study than the part competencies motivation and behaviour.

4.2. The development in the student's intercultural part competencies "Cognitive", "Metacognitive", "Motivation" and "Behavior"

The four intercultural part competencies develop differently during the course of the student’s study.

The cognitive intercultural part competence rises more during the course of the study than the overall intercultural competence. The increase is 7.5% for the Danish students and 4.3% for the international students, where the overall intercultural competence rises 1.94 % for the Danish students and 0.89 % for the international students.

4.3. Difference between the intercultural competencies of Danish and international students

Compared with the Danish students, the international students' intercultural competencies are approx. 8% higher than the Danish students' intercultural competencies. Within the framework of this research project there cannot be given a concrete bid for what the reason for this difference is.
This makes sense in the light of the fact that the cognitive intercultural part competence deals with the level of knowledge. How much knowledge do one have about cultural differences and about one’s own position as part of the cultural environment? On the study, students receive knowledge of different cultural theories from Geert Hofstede, Fons Trompenaar and Charles Hampden-Turner, Richard R. Gesteland and Edgar Stein. The students gain both knowledge of these theories and apply theories in cultural analyses where they link theory and reality.

The metacognitive intercultural part competence also rises more during the course of the study than the overall intercultural competence, but less than the cognitive intercultural part competence. The increase is 2.1% for the Danish students and 2.8% for the international students.

The metacognitive intercultural part competence deals with the ability to be reflexive in the sense of being aware of one’s own role in the relationship in a cultural context. The individual understands that one’s own frame of reference is influenced by one’s own cultural point of view and that the others in multicultural relationships have different frame of references. It is about the individual's mental capacity to be conscious of the impact of culture on the relationship in the situation and to adjust this cultural knowledge based on the acknowledgments obtained in the relationship. The increase in student's metacognitive intercultural part competence makes sense in the light of the fact that the students during their study work with their metacognitive capacity in communication subjects.
The intercultural part competence motivation is in contrast to the intercultural part competencies cognitive and metacognitive falling during the course of the study. The fall is 2.6% for the Danish students and 3.4% for the international students.

Even though the fall is moderate, it gives rise to thought in the light of the fact that students are part of a multicultural environment at IBA in Kolding and thus confronted with multicultural situations as a natural part of life at the academy.

The intercultural part competence behaviour increases during the course of the study. However, the increase is less than the intercultural part competencies cognitive and metacognitive. The increase is 2.4% for the Danish students and a minimal increase for international students of 0.4%.
Intercultural behaviour deals with the ability to translate cultural knowledge and apply cultural reflexivity to create better intercultural relationships. It is about mastering to act in intercultural situations. It is not a competence that there is conscious worked with on the study, however, students will naturally gain experience in dealing with intercultural situations due to the multicultural study environment at IBA in Kolding.

4.4. Coherence between students' intercultural competencies and gender as well as experience in interacting with people from other cultures

Besides measuring the students' intercultural competencies and progression during their study, the research project also investigated whether there is a correlation between students' intercultural competencies and gender as well as experience in interacting with people from other cultures.

In relation to gender, there is no significant difference between the intercultural competencies of male and female students at the start of the study. Looking at the development of students’ intercultural competencies from the start to the end of their study, the intercultural competencies of female students increase. Conversely, the intercultural competencies of male students fall during the study. The increase is for the female Danish students 9% and for the female international students 2.3%. The fall is for the male Danish students 1% and for the male international students 0.4%.

In relation to interacting with people from other cultures, the intercultural competencies rise from start to the end of the study for Danish students who have answered to have some, a part, great or very large experience of interacting with and being together with people from other cultures. The increase is with 23% greatest for Danish students with a lot of experience in interacting with people from other cultures. For Danish students with little experience of interacting with people from other cultures, intercultural competencies fall by 10%.

The picture is different for international students, where there is a drop for all experience categories, though with the exception of students with extensive experience interacting with people from other cultures, where there is
an increase of 2%. The fall is with 8% greatest for international students with
very great experience of interacting with people from other cultures.

5. Value of the Results

The results from the project will give higher educational institutions evidence-
based knowledge of students’ intercultural competencies and their progression
during the studies as a goal to work with not only the cognitive aspect of
intercultural competencies, which is part of the curriculum, but also the
reflective, motivational and behavioural aspect. This will mean that the higher
educational institutions will more likely be able to match the business
requirements for their employees as actors in a globalized labour market.

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Network Embeddedness in European Aquaculture

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Abstract: The collaborative European funded research and development landscape has changed in recent years. Funding competitiveness, public-private partnerships (PPP), open data policies and more poignant multi-disciplinary research means that networks of people involved in EU funded research are fundamentally different to recent years. How these networks operate, collaborate, and acquire new knowledge and products contributes to society. The emergence of the academic entrepreneur has changed the focus of educational institutions to that of quasi-businesses [1] [2] [3]. Structural embeddedness refers to the nature of relationships, links and nodes within a network, specifically their structure, configuration and quality. Research networks provide a rich setting to analyse structural embeddedness. The effects of network embeddedness are recognized in the literature as pertinent to innovation and the economy [4] [5] [6]. Network theory literature claims that networks are essential to innovative clusters such as Silicon Valley [7] and innovation in high tech industries [5]. [8] concept of embeddedness is what differentiates network theory from economic theory.

This research takes an opportunity to investigate the core research network within a research project to further our understanding of the social and economic aspects of structural embeddedness. The conceptualisation of structural network embeddedness within this context is presented followed by the methodological design indicating the research approach and implementation, which supports a qualitative case study methodology. Furthermore, initial insights and findings are presented in line with supporting the critical role that higher education plays in innovation, entrepreneurship and the creation of new organisations.

Keywords: Network; Innovation; Entrepreneurship

1. Introduction

The collaborative European funded research and development landscape has changed in recent years. Funding competitiveness, public-private partnerships (PPP), open data policies and more poignant multi-disciplinary research means that networks of people involved in EU funded research are fundamentally different to recent years. How these networks operate, collaborate, and acquire new knowledge and products contributes to society. The emergence of the academic entrepreneur has changed the focus of educational institutions to that of quasi-businesses [1] [2] [3]. Structural embeddedness refers to the nature of relationships, links and nodes within a network,
specifically their structure, configuration and quality. Research networks provide a rich setting to analyse structural embeddedness. The effects of network embeddedness are recognized in the literature as pertinent to innovation and the economy [4] [5] [6]. Network theory literature claims that networks are essential to innovative clusters such as Silicon Valley [7] and innovation in high tech industries [5]. [8] concept embeddedness is what differentiates network theory from economic theory.

This research takes an opportunity to investigate the core research network within a research project to further our understanding of the social and economic aspects of structural embeddedness. The conceptualisation of structural network embeddedness within this context is presented followed by the methodological design indicating the research approach and implementation, which supports a qualitative case study methodology. Furthermore, initial insights and findings are presented in line with supporting the critical role that higher education plays in innovation, entrepreneurship and the creation of new organisations.

### 2. Research Design and Method

The contextual setting for the study is a European funded research network, specifically, the AquaSmart network, a project funded by the European Commission Horizon 2020 research programme that converges aquaculture and technology. This single case study approach is presented as a suitable method to investigate this phenomenon in its natural context. Data is analysed using both manual and computer assisted methods (NVivo). The formally stated research objective for this study is: “to investigate social and economic aspects of structural embeddedness in an ICT research network based in the European Union”

The proposed research plans to tackle the overarching research objective and address the following questions that have arisen from a review of the structural embeddedness literature and the practical experience of the researcher:

- **RQ1** How are research networks structurally embedded?
- **RQ2** How is structural embeddedness interconnected with social and economic characteristics?
- **RQ3** What enablers and barriers to structural embeddedness are encountered within EU research networks?

The adopted research paradigm is an interpretivist approach, which sits appropriately with the research context and the research purpose and is supported widely in the literature [9] [10] [11] [12]. A qualitative approach was adopted for this research to attain the research objectives. [13] support linking qualitative method with network theory akin to the proposed research.

To satisfy the research objective and to establish a comprehensive network
perspective, this study has approached interviewees from all network nodes in the EU research network, AquaSmart. The research design follows an inductive research process, and Figure 1 illustrates the iterative approach between the analysis and the recursive link back to the relevant theories and concepts.

![Figure 1- Iterative approach](image)

The data collection phase is complete with 10 interviews conducted and relevant network documentation collected and perused. The research data analysis phase is mid-way through implementation with an expected completion date early 2018.

Using the adopted iterative approach to identify convergence of themes and patterns the data and literature has been, and will continue to be, iteratively examined with codes or themes developed based on patterns between the data and the conceptual framework. For this study, an initial set of thematic clusters were established and coded into NVivo as shown in Table 1. However, these were regarded as inconclusive and additional sub-themes were added as shown in Table 2.

Following on from data collection an iterative approach has been adopted building upon the work of [14] as illustrated in Figure 2. In addition, the literature and
documentation data has been added to NVivo to support the data analysis cycles and the integration between data sources.

Figure 2 - Qualitative data analysis approach adapted from Miles and Huberman (1994)

Currently, the research has conducted an initial cycle of data reduction, data display and conclusion drawing, however there are many further iterations required to fulfil the research objective.
This iterative approach will increase the reliability of the research. As illustrated in Figure 3, this research is in the second cycle of coding. NVivo provides a platform that is flexible in relation to variable definition during the initial phase. However, this research is not rigid, and a flexible approach has been actively addressed in the iterative cycles.
3. Overview of the case study network

The contextual setting is a high-tech\(^1\) information communication technology (ICT) network funded by EU Horizon 2020 research programme, the network (project) is called AquaSmart\(^2\), Aquaculture Smart and Open Data Analytics as a Service. The high-tech sector of the economy uses the most advanced technology available, it is often seen as having the most potential for future growth and this perception has led to high investment in high-tech sectors of the economy. The choice of a high-tech context for this case study builds upon recent research on research networks in high-technology industries [2] [15] [16] [17] [18] [19] [20]. AquaSmart is

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\(^{1}\)https://www.een-ireland.ie/eei/assets/documents/uploaded/general/ICT%20Fact%20sheet.pdf

\(^{2}\)http://www.AquaSmartdata.eu
using ICT to improve its data utilization and operations. In Europe, the Aquaculture industry accounts for about 20 per cent of fish production and directly employs some 80,000 people. Aquaculture is identified as a key focal point of the EU’s Blue Growth Strategy\(^3\). It is the fastest growing animal food producing sector in the world. Global forecast on production is set to increase from 45 million tons in 2014 to 85 million by 2030. NVivo is being used for the analysis of data, it is only one tool in the array of mechanisms (excel, whiteboards, document maps) adopted by the researcher for this case study which helped the researcher to visualize and connect the data with the theory and research objective.

![Figure 4 - AquaSmart network and role identification](image)

4. Findings and discussion

The findings presented are from the first round of interpretation and coding of transcripts. Initial insights are drawn from the data and presented alongside the key areas of the conceptual framework; structural embeddedness, social characteristics and economic characteristics. Figure 5 illustrates the grouping of industry (depicted in green) and academia (blue) while also highlighting the centrality of two of the organisations.

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Each theme was visually displayed to support the initial analysis phase as represented in Figure 6 below.

Figure 5 - Clusters of AquaSmart network

Figure 6 - Theme 1 Network Composition and sub-themes
Centrality at formation stage emerged during a discussion on power and authority with Interviewee A and adds to the depth of understanding the structure of the AquaSmart network. Interviewee A states:

“Yes, tom would have thought that he was the controller of everything”

Generally, the network was described as two clusters of node types, industry and academia, however, some respondents further grouped the consortia into three clusters. These included the end users who were the Aquaculture business partners, the researchers, who could develop a platform to combine technology and aquaculture know-how, and the trainers, who could educate and spread the new knowledge through the industry. This provides a more detailed understanding of the network as it reveals the sets within the network. However, it is too early in the analysis to detail this further. There are several different interpretations of the network composition and it seems that this is related to the timing of joining the network and prior relationships within the network. Interviewee B believes:

“Now that I am thinking about it again, I believe that it was because Tom was a nice person and he knows nice people. He brought together people who had the same mentality. I think that Tom was the catalyst for the consortium”.

Having a network broker (catalyst) for the network seems to indicate that the network was efficient to launch itself and become established. Indeed, this process has been repeated and a new network established during the lifetime of AquaSmart in a parallel domain. Furthermore, the network broker was described by Interviewee B as “building a family of researchers with common goals”.

While some of the partners had strong ties, this was not common throughout the network, there was evidence of weak ties and structural holes. Furthermore, priori relationships seem a significant factor in relation to research networks. Interviewee D stated:

“We got involved because of our previous engagement with the Greek company and AquaManager helping them to improve the tool, I think since we had already established good collaboration between our technicians and their technicians, they initiated our involvement in this network”

The social characteristics arising from the literature and outlined in the conceptual model are compliance, trust, cooperation and dominance. It is clear from the initial cycle of data collection and analysis that these characteristics are prevailing within the case study and there are possibly other sub-themes within these concepts. For example, within trust the concept of friendship emerged as a catalyst for trust. In addition, research networks bring together various types of people with differing personal and professional characteristics. For example, human aspects were a contributing factor for network relationships:

“it is important to build up interpersonal relationships, initial face to face meetings are important followed up by audio calls where you can continue the work remotely and explain your work without any additional stress caused by shyness – I personally prefer 3 year projects as the 1st year you get used to knowing each other
and then you have 2 years to do the project work. In AquaSmart – for me it was a pity that we had to finish in 2 years”

Furthermore, the closeness of the different relationships was evident, social and sport activities were recognised as contributory to building positive network relationships. There were several interviewees who mentioned temporal considerations in relation to building up trust and its connection with the effectiveness of the network.

“The first meeting is a kick-off meeting, then you have 3 months of work before the next meeting so that’s kind of 4 months really to get going”

Interviewee E believed that there was trust between partners by the milestone of the second meeting, “At first, we didn’t know each other well, but we worked closely together, and we faced issues of trust which improved by the second and subsequent meetings”. Interviewee C believes it took about a year to build trust between the network nodes. Furthermore, Interviewee A believes that the jargon in relation to aquaculture and technology creates an adverse impact on trust within a network.

“It was 8-9 months into the project when we were able to talk a common language, our understanding of aquaculture was completely off the wall”

While considering the conceptual model and research objectives the economic characteristics are linked with the output of the network such as business opportunity and network benefits. It is relevant to explore the enthusiasm expressed by the network nodes toward a common goal, Interviewee A emphasised “Partners had a common goal and interest to succeed”. Furthermore, the scale to which some network nodes viewed the network benefits and potential impact on the aquaculture industry.

Interviewee E illuminates the opportunities this network would achieve “we understood the greatness of the project – an innovative project to help the Aquaculture industry to grow”.

The initial findings identify new scientific knowledge and competency levels as key benefits of network engagement, Interviewee D suggests:

“The trust between us emerged when we started to play and practice with the tools, we realised that the potential of the analysis was high giving us a fast return on investment that you could visualise early on in the project, we never had before in the sector”

Each network node had both a collective and an individual view of benefits. Interviewee C recognised the network itself as the outcome of the engagement “This research organisation – the possibility of having a certain set of people that we trust for new proposals and new projects, that’s the main output”. Furthermore, Interviewee D highlighted this major milestone;

“One of the items was that multi-variable analysis in aquaculture is possible, normally when we realise value of data we focus on mainly 2 or 3 main factors but if you delve deeper you can see more variables/factors. When you have the capacity to extend the potential of the analysis to many factors you see the
results of the analysis is much better. Thus, the primary and secondary impact of those KPIs were identified”

From an economic perspective, a major achievement from an investment or funding institution is the creation of new jobs new companies, while at the early stages of negotiation it is clear that the AquaSmart network sees the emergence of a new company as a real possibility. Interviewee A believes the formation of a new company is imminent, however, there is little detail at this stage, “a new company…. that is still being discussed”.

5. Conclusion

Structural embeddedness refers to the quality and configuration of the interactions between nodes in a network. The data has identified insights in relation to the configuration of research networks, the distinct qualities and social characteristics prevalent in these types of networks. From the initial findings, diversity within research networks between academia and industry is identified as a challenge and that convergence of research priorities is difficult but can yield successful outcomes. The additional data collection planned for the remaining cycles as identified in table 3 will support the analysis and integration of findings toward rich contextual results and discussion.

The formation of network seems to be indicative of the quality of the network nodes and their ability to work effectively together. The foresight of specific partners to join network nodes seems remarkable and they had not emerged from strong ties. Centrality within the research network was cited as significant, there was a strong influence of the network nodes with power and prior relationships to network formation were evident. The continuation of the network beyond the temporal nature of AquaSmart is indicative of this significance.

There was a focus from respondents on the social characteristics in relation to a strong correlation about reaching the research objectives and trust between nodes within the network. Social intensity of ties was cited as significant. In addition, trust had a cumulative nature and the milestones of the project were significant. As this paper identifies only the initial findings further analysis will contribute significantly within this domain.

References

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The impact of globalization on education

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Abstract. In an era of globalization, it is imperative that university graduates become not only professionally but also globally competent specialists. The authors briefly characterize the contemporary globalizing epoch, focus on the nature of global education, and concentrate on the results of an empirical investigation that was aimed at substantiating the level of global competence of two groups of first-year students: one group from Russia, the other one, from Portugal. Finally, the authors provide some recommendations that may facilitate an effective development of university students’ global competence and sensitivity as they move to further years of study.

Keywords: Globalization; Information technology; Global education; Global competence; School; University; Student; Survey.

1. Introduction

The concept of globalization is not new in recorded history, but the current century is witnessing a globalization radically differing from the rest of the global and regional changes that have occurred across the globe. For some residents of Planet Earth, the very spirit and aura of globalization still remains an enigmatic, almost supernatural phenomenon. Nevertheless, whether we like it or not, globalization is an objective, historically driven and evolutionary process, and there is no stopping it.

The current era increasingly demands that school and university graduates become globally and democratically minded citizens of their own countries and the entire world. To achieve this goal, they should succeed in acquiring a global education and intercultural orientation that will increase their global competence and make them skilled in their ability to interact across cultures in their attempts to solve common problems that are global in essence and nature. In order to guide them in this direction, it is essential that we recognize where each individual is in terms of their global competence and global sensitivity. It is also worthwhile to note that today both
school teachers and university faculty do not possess a sufficient level of global and intercultural competences required to make an impactful influence on young people in their charge for them to become more capable in their ability to adequately understand the human diversity and the phenomenon of globalization. Even though the concepts of global/intercultural/multicultural education, in a variety of forms and capacities, are integrated across school, college, and university curricula, and students have an open access to mass media (which is a revolutionary breakthrough of the new millennium!), introducing these concepts in educational institutions is a complex and back-breaking process [1] [2] [3] [4] [5].

Keeping this in mind, we propose the following major objectives of this study: (1) attracting the attention of the academic public to the essential issues of globalization and global education; (2) substantiating theoretically and empirically the necessity of constructing global education and developing university students’ global competence, (3) organizing a survey among first-year university students to substantiate their level of global competence that they bring from school; and (4) providing a path for a future research.

Proceeding from the previous considerations on globalization and global education, we put forward the following research questions:

• Why is it important to take into consideration the issues of globalization and global values while preparing future specialists to live and work in the current interdependent world?
• Why is it important to help prospective specialists become globally competent individuals?
• To what extent are the recent school leavers competent in global matters?
• Do schools provide their graduates with sufficient global knowledge base, attitudes, and global sensitivity for them to productively interact in a globalizing and interdependent world?
• Will first-year university students’ previous school-based global competence provide a sufficient framework for them to successfully adapt to, and function in, the higher school environment in which requirements for developing students’ global and cross-cultural competence is much higher?

2. The Characteristic Features of the Contemporary Globalizing Era Globalization vs. Information Society

People’s attitude to globalization ranges differently, from fully accepting the very spirit of this phenomenon to utterly rejecting it. Along with a hectic impact of globalization, the current era is also witnessing an unprecedented information expansion and dissemination in all sides of life, with education being no exception. In connection with the spreading of information and knowledge as well as with the influx
of different means of information technology, it is reasonable to relate globalization to information society. Reasonably, they represent closely intertwined entities.

Following this, the notions such as information technology, digital technology, cyberspace, and digital space have emerged and spread worldwide. For example, cyberspace is a term describing anything related to human communication and exchange of ideas in the global network. There is every reason to believe that human society, including also the sphere of education, is not on the threshold of some minor reforms, but virtually in the beginning of grandiose global and revolutionary reorganizations. The contemporary, turbulent era bears witness to a rapid shift from the classical, print-based to information paradigm [6].

As far as the information technology and the entire entity that we call cyberspace are concerned, the current era can be characterized by the following variables: (1) a rapid upsurge of communications and electronic technology; (2) a rapid renovation and dissemination of information and knowledge in the Internet and other digital sources; (3) a gradual conservation and reduction of traditional, text-based modes of cognizing the objective reality through books, newspapers, journals, reference literature, maps, and pictorial albums; (4) turbulence and unpredictability of information in digital sources; and (5) an urgent and pressing need for providing the cyber-security of each individual and the whole society [7] [8] [9] [10] [11] [12]. Evidence suggests that the knowledge and information in the cyberspace will be augmenting exponentially in the years to come. For a person who just once enters this invisible world, even by means of a simple e-mail message, there might be no way out of this virtual reality. The traces of his work may remain forever in the annals of this ungraspable, artificially-manufactured universe.

Information and communications technology have become an indispensable element of the educational process and made academics, educators, and students think differently about the nature and essence of teaching and learning. A considerable number of schools, college, and university students prefer using the Internet to reading traditional textbooks and reference literature. Information technology rapidly soars and the cyberspace unprecedentedly augments in width and depth.

There is a dialectic interconnection between globalization and information society: Globalization entails the construction of sophisticated and super-modern technological means, the spread of information and knowledge, and the expansion and deepening of the cyberspace; the information and communication boom, in turn, enriches and propels globalization.

3. The Positive and Negative Impact of Globalization on Education

Globalization is known to make both positive and negative impact on education. On the positive side are the following variables.
• It promotes the integration of the educational systems into the European and global educational space.

• The ideas of globalization facilitate democratic reorganizations in schooling and higher education. For instance, in Russia, within the previous 20 to 30 years, alternative educational institutions such as gymnasias, rural colleges, agrarian lyceums, and farming schools have been set up.

• Globalization has brought into the world educational arena the languages such as English, Spanish, German, French, Russia, and Portuguese. But a language that is globally acclaimed is unmistakably English, the most widely distributed vehicle of communication in the world: It has an official status in over 50 countries. The penetration of this language into education and professional activities of millions of people on earth is a historical certainty. The influx of the English language encourages the expansion of English language instruction in secondary and higher institutions and promotes the reformation of language policies. Proficiency in English opens avenues for students, researchers, and scholars to participate in international grants and exchange programs organized in English-speaking and non-English-speaking countries alike.

• Globalization, along with an impact of democracy, fosters the conceptualization and implementation of the ideas of global education, which normally deals with the issues and problems transcending the national boundaries. Global education can be described from at least six perspectives [5]: Global education is an integral part of general education; a concept necessitating an unbiased attitude to alien cultures, ways of life and mentality; a new ideology requiring novel modes of thinking toward the monitoring of education as well as toward the issues of democracy, morality and freedom on the planetary level; a progressive movement emerged owing to contemporary globalization; a continuous process whose objectives will be realized with different degrees of effectiveness; and a new phase of democratization and humanization of the educational process. A major objective of global education is developing school, college, and higher school students’ global competence for them to favourably and productively function within their own micro-culture, the mainstream culture and the global society.

On the other pole, globalization makes a negative impact on the issues of education.

• Some people across the world regard globalization as something alien and foreign, a novel trend capable of destroying unique national cultures, values as well as the structure and content of national systems of education. They say that globalization is a disaster that may shatter the achievements having been shaped for centuries.

• Globalization brings about the ideas of neoliberalism that share many attributes with political, social, economic, philosophic and educational categories in the
prisms of beneficial effects of free market, individual success and wealth on human lives and their work. Neoliberalism accelerates a movement from the national and local to the international and global, promotes extensive economic liberalization objectives of the ever growing national and global markets, and fosters the reduction of government spending on public schools and public universities [13] [14].

- The impact of globalization increases the gap between urban and rural education. In many countries, rural schools face more problem than urban ones. Rural schools usually lack financial resources, experience teacher shortages, lack necessary sociocultural assets that are in great profusion in metro areas. In Russia, for instance, some rural schools, especially located in isolated and impoverished settings, are completely closed because of people’s migration to urban areas and better locales. With schools closed, some villages cease to exist as well. This problem may be increased by the dimension of the country: the bigger the country, the bigger the distances between cities or between the rural and urban areas, preventing citizens from the rural areas to be in contact with the culture, the industry and the financial and economic power.

- Globalization increases inequality in all spheres of human activity as well as in the entire educational space of the world. From a socio-economic and educational perspectives, this global educational space can be called a “broken space,” with the global territory divided into two halves: the industrialized countries and the rest of the countries. Most of the countries of Africa, Asia, and South America face a high death rate among children, experience huge problems with illiteracy, and have a restricted access of children and teenagers to information technologies. These and other negative factors place these latter countries into a marginalized position [15]).

- Globalization, promoting the influx of English as a super gigantic foreign language, at the same time, ousts other foreign languages within the borders of non-English-speaking countries. In Russia and Newly Independent States, less and less students wish to learn French and German, the languages that, along with English, have been traditionally instructed in almost all educational institutions. Some schools fully shift into instructing English as a sole foreign language. The same scenario is happening in Portugal where the first foreign language is English, followed by Spanish.

Mentioning two great opposing forces that may determine the fate of humankind in the 21st century, Reich [16] comments,

The clash between technology and tribalism also is likely to be reflected in the .... emerging social structure. Increasingly, the best-educated in every region of the globe—including China, the Asian subcontinent, and Africa—will converge into a global, technological elite whose members have more in common with one another than with ethnic, religious, or national groups of which they are nominally a part. The elite will communicate incessantly around the globe—doing business with one another, learning from one another, visiting and vacationing together. The
advancement and spread of technology will make members of this elite far wealthier than the populations surrounding them. They can be expected to oppose tribalism in all its form—rejecting economic isolationism, cultural conservatism, and narrow religious orthodox. (p.34)

Having examined some theoretical aspects of globalization and related issues, we further move on to discuss the empirical variables of our study.

4. Method and Discussion

We have conducted a survey among first year higher school students to check their knowledge of, and orientation on, global issues. The sample respondents included 25 students from the Polytechnic of Porto (Portugal) and 25 students from the Birsk Branch of Bashkir State University (Ufà, Republic of Bashkortostan, Russia). In both countries, the survey was organized right at the beginning of the 2017 academic year. By so doing, we checked the students’ global knowledge base, i.e. the knowledge base that they brought from their secondary schools. The questionnaire consisted of three parts. The first part included seven questions. The participants were asked to provide their viewpoints on some of the burning issues having swept the current turbulent and globalizing era. The second part, also including seven questions, required selecting correct answers out of several ready-made points. Our task was to check the students’ knowledge on some globally acclaimed truths and facts that an average first year university student - a yesterday’s school graduate - should have learned at school.

The third part of the questionnaire was special. In it, the participants were asked to provide their first impressions, so-called “generalized” opinions concerning a subsequent nation (country) as a sociocultural group. The respondents were to provide their associations in short, that is, in a word, phrase or a short sentence. They were to think of only one generalization and put down what first comes to their minds when the name of a subsequent country suddenly emerges in their minds in whatever situation they happen to hear about it, see it on the map or other.

4.1. The First Step of Investigation

Let us start from the first part of the questionnaire and comment on the participants’ insights concerning some of the points. Responding to the question “How do you understand the notion of globalization (please, provide a free interpretation)?,” for the most part, the students exhibited a positive attitude toward globalization and global changes occurring in the world. We provide selected responses:
• Globalization means an easy communication and travel (a Portuguese student).
• Globalization is a connection between countries and cultures, focusing on the acceptance and inclusion of everyone (a Portuguese student).
• It is a connection to the world through the use of technology, through creating a reality where information is shared instantly (a Portuguese student).
• Globalization is something all-planetary, when not only one person but all people solve some problem (a Russian student).
• Globalization means to change something in great quantity (a Russian student).

Some Russian respondents expressed a negative disposition. One student commented, “Globalization destroys languages. I am against it.” Another one interpreted this phenomenon like this, “Globalization may have both positive and negative side. Globalization ‘has’ a lot of possibilities. At the same time, more advanced countries ‘conquer’ and ‘ruin’ less advanced nations.”

Another point required students to provide their opinion on the worst hazards that humanity encounters. According to the Portuguese respondents, the majority of hazards that human civilization encounters today can be divided into 3 levels: micro, meso and macro levels. At micro level, the problem is mostly related with the human mind. At meso level, the most important problems are climate change, global warming, natural catastrophes, pollution, hunger, poverty and war. One of the Portuguese attendants ventured to give an ambiguous answer, “The worst hazards that the human civilization encounters today are the different religions and ethnics.” As for the Russian participants, 13 of them unidentified natural catastrophes (earthquakes, floods, volcano eruptions) as the worst risks for humanity. Eight students mentioned terrorism as the worst hazard. In their list of answers, the Russian students also mentioned the man-related disasters such as environmental pollution (3 students), problems with waste (1), human degradation (2), mass diseases (1), poverty (2), and AID/HIV infection (1).

Dealing with the question “What could be done to improve the entire educational system in the world (please, provide a free interpretation)?,” the learners were to select three points out of the given six points. The Portuguese students preferred the following points (in priority order): increasing financial support (25 students), restructuring educational authorities (16), establishing long distance-education (12). The Russian respondents preferred from among the choices the following items: increasing financial support (22), preparing better teachers (14), improving school discipline (13). The results transparently show that the young people in both groups have a good understanding of the fact that education needs sufficient funding to move ahead and withstand difficulties. Receiving leftovers from national budgets, educational institutions in some countries cannot afford to repair school buildings and broken equipment; replace time-worn furniture; buy necessary literature, teaching aids, computers and related technology; obtain school buses and
other means of transportation; and install air-conditioning. Educators often complain about experiencing a second-rate status in society. One of the main causes of this inferiority complex is low pay. Teachers may have quite a positive image and prestige in society but earning little money immediately decreases this prestige.

Another question required the students to think about the possibilities of a further survival of libraries in the age of the Internet. Nineteen respondents in Portugal and 13 participants in Russia reflected that in the years to come school and university students would use both the Internet and libraries. At the same time, some students in both countries fear that, in the long run, libraries may cease to exist because of the tremendous impact of digital technology and the Internet upon many sides of professional and everyday life.

While answering the point “What personal qualities should a globally thinking person possess?”, the recent school graduates were asked to mark two items out six. As a result, 20 Portuguese students consider that a globally competent person should be proficient in two-three languages and 17 respondents maintain that such a person should have a liking to travelling; whereas 18 Russian students assume that a globally competent individual should be democratically minded, and 15 students are of opinion that such a person must be fluent in two-three languages. The inclination of the Russian respondents to the phenomenon of democracy is quite understandable, because the country is on the way to becoming democratic. The respondents seem to be awaiting what a real democracy is and when it will be established.

The question “What could be done to improve the entire economic system in the world?” elicited thought-provoking responses. The Portuguese students’ suggestions were centred around the issues such as the improvement of the distribution of resources, the cooperation between countries and cultures, the improvement of education, and the creation of jobs. All these efforts depend mostly on human beings themselves. The Russian participants singled out the issues such as establishing equality among peoples, combating poverty, and also creating new jobs. Intermittently the Russian respondents reflected a range of sore points. One participant pointed to the necessity to lower the salaries of officialdom (bureaucrats). Another one commented on the necessity to attend to the domestic economic problems, not to support other countries financially. Still another one, probably humorously, wrote that it is necessary to print more money.

We also asked the first-year students about how many countries of the world they had visited by the time they started to fill out the questionnaire. We came to learn that all Portuguese students participating in the survey had previously visited a foreign country. The number of countries already visited varied from one to eight. Regrettfully only two Russian students visited two foreign countries each; five other students each paid a visit to one country. The rest have never stepped on the threshold of another sovereign state. The explanation for the results obtained with the Portuguese students may reside in the fact that the access to low cost flights and accommodation is very easy. Since secondary education, students (around 15 years old) are accustomed to organizing trips either with teachers or separately, building groups of students.
Furthermore, one might also find explanations for this scenario with the impact of the Erasmus mobility of students, staff and lecturers. For youngsters, it is normal to travel.

**4.2. The Second Step of Investigation**

The second part of the questionnaire included the test-like questions: The students were asked to select correct answers out of the given number of items. This list of questions was oriented on checking the students’ knowledge on some important historical and global events, data, etc. The findings demonstrated that 92% of Portuguese students and 88% of Russian students know that the American continent was opened by Christopher Columbus; that the capital of Turkey is Ankara (48% and 32% correspondingly); that the ancient Mayan civilization was located in North America (84 and 3); that the fastest animal in the world is the cheetah (25 and 21); that the longest river in the world is the Nile (40 and 53); and that China has the largest population (96 and 88). The Russian students have demonstrated a lower level of global knowledge in this case, which means that the high school that they recently left had not paid a sufficient attention to such issues. It may also mean that the students themselves might not have been sufficiently interested in similar phenomena.

**4.3. The Third Step of Investigation**

As the respondents were all citizens of Russia and Portugal, we intentionally did not include Russia and Portugal in this part of the survey, supposing that the students’ attitude to their home country, in any event, would be more or less “positive,” and their knowledge of their homeland would ultimately exceed that of other countries and places. Therefore, their responses with reference to Russia and Portugal might not be adequate in order to compare or to put them in one logical rank with their responses concerning other nations and locals.

While analysing and processing their short, “it-immediately-occurred-to-me opinions,” we, in turn, “squeezed” them within short generalized notions. For example, while conceptualizing over Egypt, most of the respondents mentioned the Egyptian pyramids as the symbols that first came to their minds. The respondents wrote the versions: “high pyramids,” “pyramidal constructions,” “three pyramids,” “historical pyramids,” “pharaohs’ pyramids,” and “pyramids.” Upon processing all these versions, we selected one generalized version: “pyramids.” Upon scrupulous selection of the most frequently used responses, we left in the columns of Table1 three most frequently mentioned answers in priority order. While considering Vatican and Egypt, the Portuguese group of students provided two responses all in all.
Judging by the comments, the respondents are, to a certain extent, knowledgeable about the world. They can “recall” some fundamental priorities characterizing certain countries or cultures. A fairly large number of students in both countries quite correctly reflected that one of the top values or frequently mentioned issues for Great Britain is monarchy (queen, crown), for France – the Eiffel Tower, for Spain – football, for Italy – pizza, for Vatican – Pope, for India – movies, for Canada – ice-hockey, for Brazil – carnivals, for Egypt – the pyramids, and for Australia – the kangaroo. These higher scores on the priority continuum can

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42
be explained by two arguments. First, these nations are really famous for the mentioned phenomena. For example, China has always had a huge population; therefore, this aspect of China has always been in sight of the people across the globe. Second, both Russia and Portugal have international relations with each of these nations, and, as the respondents are Russian and Portuguese citizens, they visualize each of these foreign countries through the prism of such relations. For example, Russia is famous for ice-hockey; therefore, many young people are knowledgeable about other countries where this sport is practiced. They know that ice-hockey was originated in Canada, that the Canadian and American ice-hockey teams are very famous, and some legendary Russian hockey players signed contracts with the North American hockey clubs. Third, some students might have visited some countries mentioned above, and, for this reason, they are knowledgeable about some of the historical and current priorities, facts and values of a corresponding country. A range of respondents have no associations with some countries, which means they have little or no knowledge of a given culture.

Apparently, the students’ responses are subjective in nature, but, collectively, they express a more or less adequate picture of what a corresponding culture symbolizes to an alien individual “at first thought.” It helps us understand (even though only from the Russian and Portuguese students’ viewpoints in this very survey) from what prism can a person think of and view a corresponding culture and ethnicity as well as toward which values and modes of life of a given culture should we, foreign residents, show tolerance and a magnanimous and unprejudiced attitude.

5. Recommendations

The authors’ personal experiences and the research outcomes are indicative of the fact that the new entrants – former secondary school students - possess a certain level of global and multicultural competence. But the ever-augmenting globalization, migration of people, and the influx of knowledge and information in the Internet require that contemporary young people, who will soon enter the cohort of working specialists, to be more competent in global issues and in their ability to favourably function in the contemporary human society.

The above-presented discussion thus far leads to making several recommendations to university faculty responsible for preparing future specialists for working in the 21st-century, globalizing society

1. Addressing global issues. Even though it is difficult to readily identify the ways how and to what extent students’ global competence have been progressed, college and university faculty should address global and intercultural issues for their graduates to easily and favourably adapt to, live and work in, the ever-changing world.

2. Enhancing students’ global competence through the subject areas studied across the curriculum. One of the effective ways is introducing students to both widely
known knowledge about the world and also to facts and information that may be little known or unknown to students and public at large. Presenting information by clustering it within certain global topics is an effectual strategy to motivate and expedite the teaching/learning activity.

3. **Promoting student exchange and internships.** Higher institutions should seek to organize student exchanges and international internships with educational institutions in other countries so that students might travel and deepen their global scope and become more interculturally competent. Students participating in such programs gain global knowledge and skills of interaction with people from various cultural backgrounds and bring back valuable memories. Such experiences also increase their multicultural experience and help them become more tolerant toward alien cultures, other ways of life, and unaccustomed mentality. Internship programs may be offered for higher school students during their summer vacations. During internships students can get acquainted with a new culture and new modes of labour activity, create a network of contacts, and gain an understanding of the growing global interconnectedness. Assuredly, internships provide young people with opportunities for practicing and mastering foreign language skills in real-life situations.

4. **Capitalizing on developing reflective personalities.** As the times are becoming more roaring and unprecedented politically and socially, it becomes incumbent upon us to develop reflective and creative citizens of the world, capable of making wise decisions and taking responsibility for the present and future of their home country and the world.

5. **Designing a special course on global education.** It is quite desirable to construct for university students a special course on global education (for example, under the title “Developing prospective specialists’ global competence”), which can be introduced in different departments and which may encompass the topics such as globalization and global education, nations of the world, secondary and higher education across continents, renowned personalities, international languages, global threats to humanity and other issues.

### 6. Conclusion

The study has sought to conduct a pedagogical inquiry into the annals of globalization and achieved some insights. Only a small part of the issues surrounding this grandiose phenomenon and its relation to educational matters have been examined, because we have undertaken only a small and beginning research. Soon we plan to undertake a wide, cross-cultural survey of a similar type that would provide us with more information, data, and insights.

The survey findings and test scores, however, have been instrumental in gaining a deeper understanding of the issues of globalization and global education, in
providing us with insights about where the strong and weak points in the respondents’ global knowledge arsenal are, and in setting stage for continuing our investigation.

Global education, when organized properly, offers vision, knowledge, and solutions to a range of important issues facing school and university graduates in the era of the current cross-cultural changes and developments. Our experience indicates that developing global competence, both at the level of schooling and at further stages of an individual’s study at college and university, is a complex undertaking requiring a significant amount of strategic implementation. There is also growing evidence that the educational institutions of different type, located in Russia and Portugal, as well as in any other progressive nation-state, will do their most to help young citizens to attain a functional level of global literacy and global mindedness.

References
Determining an influence in the adoption readiness of extended reality technology through educational studies

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Abstract. In this report, we share our findings from a collaborative project course that introduce a new technology topic to students from different study programmes. Students from three bachelor programs within marketing, culture and media, and information technology participated in the project. We set out to examine how a group of students views the eXtended Reality (XR) field and its future importance for their career. An intention with the project is to examine how students categorize themselves into the segments used in technological innovation diffusion and then to follow their progress throughout the project course in order to understand how students disseminate emerging technology. This understanding is important for establishing how higher education can positively affect the student’s transition into an entrepreneurial role within an emerging field.

Keywords: Extended Reality, Adoption Readiness, Higher Education

1. Introduction

Extended Reality (XR) has become a broad term for describing technologies such as Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR). Particularly VR and AR have longstanding expectations described to them, and we should note that from a technological perspective we must often refer to their distinctive names. However, from a service design perspective they have many commonalities and therefore we choose to refer to the field of study as XR. Until recently both VR and AR have never become truly accepted market technology, and this failure has been somewhat surprising [1]. XR technology and applications are starting to show significant business benefits in many areas, such as industry [2], architecture [3], engineering [4], healthcare [5][6] and education [7]. In the meantime, the consumer market is slowly maturing [8], although the pace of headset sales has
not matched expectations [1]. The technology is exciting, but some experts claim that we need to give it 2-5 years for a real breakthrough among consumers. AR applications for smartphones are in turn ready to make a larger impact in the near future [8][1]. This is mainly driven by mobile augmented reality that encourages more and better visual communication. The introduction of the mobile AR-enabled game Pokémon Go in 2016 [9] reset the expectations for the field. The unexpected and almost immediate diffusion of an innovation [10] showed that a low-tech solution might very well offer consumers an experience that at least temporarily displaces other habits. In addition, the availability of a mass-market through smartphone-platforms has been another likely reason for its success.

2. Theoretical framework


1. Innovators

Innovators are devoted to new technology and have a fundamental interest in how devices work and what they can do. They are interested in participating in developing the properties of a product for simple enjoyment and want to test them as soon as they are available in some early form on the market. Innovators are rare in any market segment but are important as their endorsements reassures other players in the market.

2. Early adopters

Early adopters are often described as a group driven by a dream and ability to achieve a new level of understanding. This is not a generalizable skill an individual possesses, but rather a context and experience specific ability to make the necessary strategic connections in order to introduce a new technology to a certain field. The identification of original and innovative opportunity for change in that particular field offers a good test of whether an individual belongs to the early adopter group.

3. Early majority

The early majority that arrive after are pragmatists, driven by an insight that the cost of adopting technology early is lower than the long-term benefit of not changing habits. The grouping requires pre-identified connections and an established market trust towards the new technology. A disruptive technology and a need to change systems will likely face fierce initial resistance from this grouping. However, as the early adopters spread their message and their experience of successful ventures, the pragmatic early majority will follow once they determine the cost/reward ratio shift towards increasing rewards.

4. Late majority
Once the late majority grouping becomes activated it means that a market has already been created and that most practices for the technology adoption has been established. This grouping is best determined as followers or as coming late to the field.

5. Laggards

Lastly there are the laggards, and they do not want anything to do with new technology. The reasons vary, but it can for example be personal or economical. The only reason laggards buy into new technology, is when it is well hidden or abstracted inside a product and they do not realize it is there, e.g. a microwave containing a microprocessor.

In our study, we use these groupings as to determine how students accept and integrate new technology. We then try to understand if and how the education experience provided influence their view of themselves in relation to adopting new technology and seeing future benefits of using such technology in a professional setting. Moore [11] considers that users fall into a spectrum of ability to accept new technology and he specifically highlights the difficulty of any group compared to the group of its immediate left. The chasm he finds between the groupings determine significant obstacles that often require a different market offering and message for the diffusion to happen. The widest chasm, that he argues also determines the market viability of a new technology, is between early adopters and early majority. In this study, we aim to examine the interprofessional group development to understand if and how education affect students’ perception of and readiness to assimilate new technology in collaboration with students from other study programmes.

The diffusion itself occurs through a five-step decision making process [10]. While the diffusion signifies a group phenomenon and how an innovation spreads, the adoption process is based upon the stages an individual undergoes from first being introduced to a new innovation to finally adopting it. These five stages are knowledge, persuasion, decision, implementation, and confirmation. In our study we further intend to examine the last two stages in the adoption process to see how students relate to continuing to embark on a new topic. In the implementation stage an individual determines the usefulness of an innovation and might search for more information about the innovation whereas in the confirmation stage an individual makes a final decision to continue using an innovation. By looking into these stages, we gain information on students’ standpoint on using XR technology in their future career.
In January 2018 a project course called ‘Arcada XR – Competence Development in Service Design for Virtual Reality (VR) and Augmented Reality (AR)’ was initiated. 51 students in total were divided into seven interdisciplinary teams and given an assignment to create XR promotional material for different study programmes at ARCADA UAS. The project was divided into three different entities; technical knowledge creation, the production phase, and the evaluation/reflect phase. In the first phase companies within the field of XR and digital marketing were invited to give guest lectures to give insight into the current trends and use cases within the XR field. In addition to this, students were introduced, under the supervision of teachers, to the technology used during the project. Students were acquainted with the use of monoscopic and stereoscopic 360°/180° cameras in addition to traditional camera techniques, VR video-editing, augmented reality platform Arilyn [12] and WebVR platform Vizor [13]. During the production part of the project students focused on storytelling and developing an immersive concept to be used to promote different study-programmes. In the evaluation and reflection part of the project students tested the different environments and gathered feedback from other students. A final seminar was arranged where all XR environments and concepts were introduced to invited guests.

7. Method

Based on the aim of our study we conducted a survey among all students participating in the project. We draw our analysis from two questionnaires given in the beginning and at the end of the course. Our questionnaire was divided into three sections; background, knowledge, and learning and future. It started with a few background questions (study program, age, gender), followed by general questions regarding the students’ knowledge on VR and AR. Then they answered a third section where the statements were developed according to the technological diffusion model [11] and contained questions and statements in relation to competences and future use of XR. The statements had a 6-point Likert scale, with 1 = completely agree, and 6 = completely disagree. Participation was voluntarily, and students participated anonymously. Results were analysed descriptively, using Students t-test, analysis of variance (ANOVA) and summary score in relation to the technological diffusion model.
8. Results

In total 39 students answered the questionnaire at the beginning of the course (76%) and 40 (78%) at the end. Of the students answering at the beginning a slight majority were male students (n=20, 54%), whereas at the end of the course females were in slight majority (n=19, 53%). A majority of the students were in the age of 21-25 (n=24, 63% and n=27, 69%).

The second part of the questionnaire contained general questions on the students' knowledge and experience about extended reality as the course started. Results showed that a majority (n=34, 92%) of the students were not familiar with the concept of extended reality (XR). However, the terms virtual reality (VR, n=37, 95%) and augmented reality (AR, n=23, 60%) were clearly more familiar to the students. Over half of the students (56%, n=22) had tested virtual reality headsets prior to the course. Moreover, 41 per cent of the students (n=16) knew that they owned a device that supports augmented reality, while only 10 per cent (n=4) owned a VR device. A vast majority (n=35, 90%) of the students were not knowledgeable in the techniques behind AR and VR.

The third part of the questionnaire contained statements about competences in XR (see table 1). In the beginning of the course (round 1), the informants took their stand in five variables as late majority and early majority as well as early adopters. In the second round (round 2) the informants took their stand in the same segments of the diffusion model, except one person (2%) who took his/her stand in the laggards, see figure

<table>
<thead>
<tr>
<th>Variable</th>
<th>Round 1 (n=39) Mean (SD)</th>
<th>Round 2 (n=40) Mean (SD)</th>
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<tr>
<td>Competence in VR will be important in my future career</td>
<td>3.54 (1.05)</td>
<td>3.51 (1.21)</td>
<td>0.09</td>
<td>38</td>
<td>0.93</td>
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<td>Competence in AR will be important in my future career</td>
<td>3.50 (1.11)</td>
<td>3.42 (1.31)</td>
<td>0.29</td>
<td>37</td>
<td>0.78</td>
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<td>XR applications/technology should be utilized more in my studies</td>
<td>3.14 (1.27)</td>
<td>2.78 (1.51)</td>
<td>0.97</td>
<td>35</td>
<td>0.34</td>
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<td>XR applications/technology should be taught in my study program</td>
<td>2.75 (1.46)</td>
<td>2.81 (1.67)</td>
<td>-0.160</td>
<td>35</td>
<td>0.87</td>
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<td>VR will be as common as mobile phones within the next five years</td>
<td>3.69 (1.32)</td>
<td>3.97 (1.48)</td>
<td>-0.801</td>
<td>38</td>
<td>0.43</td>
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In figure 1, we show segmentation of students in relation to the technological diffusion model proposed by Moore [11]. Round 1 and Round 2 measured for 5
variables are directly comparable. In addition, we added 14 new questions to the questioner at the end of the course. The intention here was to validate results from the small sample of 5 questions once the students had gained knowledge. The segmentation differences between the comparison of 5 questions and 14 questions show a narrowing of answers, thereby an increase in centrality of the group dynamics.

Figure 1 The five segments of the technological diffusion model described by Moore [11]. Percentage distribution according to the model, as well as for the informants in Round 1 and round 2, were five variables were calculated. As validation, we additionally measured 14 extra variables for Round 2.

When looking closer at answers from round 2 we see that a large majority of the informants had an interest in XR technology after the course (n=23, 67%) and most of them saw a great value in the technology (n=26, 65%). Most of the informants were positive to learn in interprofessional teams (n=24, 60%). The questionnaire given at the end of the course also included some statements about the students’ perception of future use of XR. These statements were added to see if acceptance, implementation and confirmation of the innovation were visible through future use. On the question if the student will continue to read and search for further information about XR, the answers were evenly distributed, as 50 per cent of the
students leaned towards agreement and 50 per cent leaned towards disagreement (see figure 2).

![Chart 1](image1.png)

**Figure 2** Students intentions on implementation of XR (n=40)

This pattern was the same for the question on future use of XR applications (see figure 3).

![Chart 2](image2.png)

**Figure 3** Students views on the future use of XR applications (n=40)

In the question about the future importance of XR in the students’ everyday life answers were leaning towards it not being that important (see figure 4).
We also wanted to know if the students saw potential in XR as a forthcoming field where they could work as entrepreneurs. The results showed that students were more sceptical to this (see figure 5).
9. Discussion

This study set out to investigate if education can affect students' perception on assimilation of XR technology and its future importance for the students' careers. The principal finding in this preliminary study show that all students did not clearly determine the usefulness of implementing XR technology, placing the majority of students in the early and late majority categories in the Diffusion model. The comparison between before and after showed no significant adjustment to the left in the adoption model, as hypothesized. This result is supported by the fact that only about half of the students were willing to seek more information about the concept after the course. This is also supported by the fact that the confirmation stage, where an individual makes a final decision to continue using an innovation, showed similar results. The importance of XR in the future, both in everyday use, as well as a profession, showed that students were not convinced. The results did, however, indicate that students have some interest in using XR applications, even if they are not considered to play an important role in their everyday life or future careers.

Possible reasons why students' perception of and readiness to assimilate XR technology might be the already mentioned 2-5-year time period for real breakthrough. It is also possible that the level of equipment offered today is not mature enough to convince students to assimilate this new technology. A broader knowledge and experience about XR technology combined with collaborative as well as practical learning offered in the course could also be the reason for a more critical or sceptical standpoint, especially as collaborative learning has been shown to foster the development of critical thinking [14]. However, it is interesting to notice, that students were not completely in disagreement of adoption of XR technology, as most of the students were willing to continue to use and follow the development of XR technology. This is especially interesting as the hype around XR has been lively in the recent years. On the other hand, the Gartner Hype Cycle Model [15] shows that AR is coming to and XR are at the second hype curve, which indicate the beginning of real adoption growth. This also supports the notion that students attending the course are somewhere between early and late adopters in the diffusion of innovation model and might on the Gartner Hype Cycle model now be situated in the trough of disillusionment and moving towards slope of enlightenment. AR is estimated to have a real potential in the consumer world in the near future. Therefore, we also need to evaluate the content and structure, the pedagogics as well as the amount of different techniques (including maturity level of equipment) introduced to the students during the course. Students might find it overwhelming to learn a completely new field of technology as they have no or little prior knowledge. This might have affected the adoption readiness and their standpoint in the importance of XR for their future careers. To cause a clear shift to the left in the diffusion model more courses in the XR field may be required.
This study is to the authors best knowledge, the first of its kind to utilize the Diffusion of innovation model for XR technology in higher educational settings in Finland. We believe that our preliminary study has contributed with some new insights, but there are some weaknesses that need to be addressed. The questionnaire distributed to the students suffer from some methodological deficiencies, as not all questions/statements were comparable before and after. Even if 76 per cent of the students participated in the survey, the total population was small. Therefore, the conclusion from the results should be drawn with caution. More studies with larger student groups are recommended. From a methodological standpoint, this study adds some value, as the diffusion of innovation model was tested in the comparison between the 5 before and after questions and the 14 new questions in the questionnaire, which showed similar results, therefore validating the model.

As stated, this is a preliminary report on an ongoing research project. In the future, the results will be broadened with qualitative data from students weekly learning diaries. By adding a new layer of information some of the unanswered questions in this study may be answered, as well as give new insights into questions why students were not convinced on implementing XR technology.

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Perceptions of Generic Entrepreneurial Competences of the first-year Business Students

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Abstract: Since education aims at enhancing the development of students’ competences, higher education institutions should not only facilitate students’ professional competence building within a certain academic field, but also the development of the generic competences that can be used outside the learning context. In the autumn 2017 a new curriculum (OPS2017) was launched in the business department of South-Eastern Finland University of Applied Sciences (Xamk) in Mikkeli. Besides the development of business competences, the curriculum aims at supporting the development of entrepreneurial generic competences of students and enhancing their entrepreneurial behaviour already during the studies.

This article introduces the results of the quantitative study related to the generic entrepreneurial competences of the students in the beginning of their studies in January 2018. The study was carried out with a questionnaire including 38 statements as variables. There were six main themes under study: Self-confidence and self-image, Persistence and goal-orientation, Creativity and initiative, Uncertainty-tolerance, Accuracy and responsibility, and Social skills.

All in all, the first-year business students’ perceptions of the generic competences seem to be at quite a high level, which gives a solid foundation for their education. Further, the results of this study and its results will be used in a multinational context not only to compare the findings between different nationalities, but also to find out the similarities on business students’ generic competences beyond the nationalities in the beginning of their studies. What it will reveal eventually, remains to be seen later.

Keywords: Business Studies, Entrepreneurial Behavior, First-year Students, Generic Competences

1. Introduction

Following the European Qualifications Framework (EQF) the Finnish National Qualifications Framework (NQF) has eight levels covering all learning in secondary education, further education, vocational education, and higher education. The
bachelor’s degree is at level six. According to the NQF there are recommendations for using generic competences and subject-specific competences in the curricula. Since education aims at enhancing the development of students’ competences, higher education institutions should not only facilitate students’ professional competence building within a certain academic field, but also the development of the generic competences that can be used outside the learning context [1].

In the autumn 2017 a new curriculum (OPS2017) was launched in the business department of South-Eastern Finland University of Applied Sciences (Xamk) in Mikkeli. Besides the development of business competences, the curriculum aims at supporting the development of entrepreneurial competences of students and enhancing their entrepreneurial behaviour already during the studies. In addition, the new curriculum aims at better supporting the development of skills for setting up and running one’s own company.

In order to make the development of students’ entrepreneurial competences feasible, the competences will be examined by a follow-up study. It consists of three sub-studies related to entrepreneurial attitudes, generic entrepreneurial competences and business-related entrepreneurial competences. Further, the development of these competences will be examined annually. During the first year, each of the sub-studies will create a starting point for the follow-up study and each of them will be conducted during the second- and third-year studies. Finally, a comparison of the results will be done, and the development of the entrepreneurial competences will be documented. This article introduces the results of the sub-study related to the generic entrepreneurial competences of the students in the beginning of their studies in January 2018.

2. Students’ different kinds of competences in higher education

The concept of competence has originated from vocational education. However, it is also used in higher education. Many western countries have applied a competence-based approach to higher education. Courses are defined in terms of outcomes to be achieved by students, and the assessment of learning outcomes is based on the criteria stipulated in competence standards. With a holistic approach, competences integrate the personality and behavioural perspectives, and they are a synthesis of knowledge, skills, attitudes and personal qualities for the performance of specific professional tasks [2]. Earlier studies have suggested that competences are developed partly as a result of personal characteristics and experiences outside the school environment. [3] [4]. Therefore, the concept of competence should not be connected only to the area of professional competence, since it also includes more generic competences.
Further, there are several studies indicating many positive characteristics related to entrepreneurship and entrepreneurial behaviour [5] [6] [7]. Many entrepreneurial features and characteristics can be developed, yet some of them can also be regarded as inborn characteristics. However, this study considers that learning entrepreneurial competences is achieved both through experiences and it is also promoted by well-directed educational efforts [8]. Although it is difficult to make a clear distinction between the categories, Table 1 simplifies them and presents the entrepreneurial competences of the study. Further, the list of generic competences are recommendations of ARENE [9] [10] for the Finnish universities of applied sciences (UAS). The subject specific competences are the learning objectives of the degree programme. The distinction between inborn personality features and learnt features, in turn, aims at dividing the development of the competences between education and up-bringing and growth.

Table 1. A broad framework of the entrepreneurial competences [11]

<table>
<thead>
<tr>
<th>Generic competences</th>
<th>Subject-specific competences</th>
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<tbody>
<tr>
<td>Learning competence</td>
<td>Competence of business operations, entrepreneurship and business environment</td>
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<tr>
<td>Ethical competence</td>
<td>Competence of marketing and customer relationships, organizations and management, financial administration</td>
</tr>
<tr>
<td>Communication and social competences</td>
<td>Competence and development in business</td>
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<tr>
<td>Development competences</td>
<td>Knowledge and skills to set up and run a new venture as well as develop the business/company (Learning objectives of the programme)</td>
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<td>Organizational and societal competences</td>
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<td>International competence</td>
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<tr>
<td>General personal competences which create a foundation of subject-specific competences (ARENE 2006)</td>
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<tr>
<td>In-born personality traits and learnt features through personal growth and up-bringing</td>
<td></td>
</tr>
<tr>
<td>Values and attitudes</td>
<td>Personal maturity skills (self-awareness, accountability, emotional coping and creativity) (Schalenskamp &amp; Smith 2000)</td>
</tr>
<tr>
<td>Self-esteem and self-image</td>
<td>Attitudes towards entrepreneurship and entrepreneurial behaviour (e.g. Ajzen 2001; Chen &amp; Lai 2010; Henry et al. 2003)</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>Entrepreneurial intention (e.g. Ajzen 2001; Audito et al. 2001; Diepgen &amp; Fayebe 2008)</td>
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<tr>
<td>Need for achievement</td>
<td>Garelli, Atteni &amp; Danilo 2010; Olschonka, Silbereisen &amp; Schmidt-Rohrkind 2010; Pihlaja 2008; Soutsis, Zieritz &amp; Al-Lahamp 2007.)</td>
</tr>
<tr>
<td>Approach to work</td>
<td>Implicit and underlying personal characteristics which are related to the entrepreneurial behaviour of an individual (e.g. Bembenutty 2010; Chen &amp; Lai 2010; Collins et al. 2004b; Gibb 2010; Haiminen 2010; Henry et al. 2003; Shane et al. 2003)</td>
</tr>
<tr>
<td>Entrepreneurial attitudes</td>
<td>➔ personal characteristics which are related to the entrepreneurial behaviour and actions as well as the likelihood to set up one’s own business or other venture</td>
</tr>
<tr>
<td>Uncertainty-bearing attitudes (e.g. Ko &amp; Butler, 2007; Ryno &amp; Rypipaa 2006; Zempekakis 2008)</td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
</tr>
<tr>
<td>➔ implicit and underlying personal characteristics which are related to the entrepreneurial behaviour of an individual</td>
<td></td>
</tr>
</tbody>
</table>

As a result, this sub-study has been conducted already in the beginning of the first-year students’ studies. In other words, the studies in higher education have not yet had strong influence on the students’ generic competences. In addition, the forthcoming influence of the education can be examined later, when the starting point is known.
3. Implementation of the study

This first sub-study was carried out with a questionnaire including 38 statements as variables. Besides the 38 statements (alternatives to answer how well the statements corresponded with their own opinions: 1 = not at all  2 = not well  3 = fairly well  4 = well  5 = very well), the students were asked questions about their background information, their age, gender and academic year.

An invitation and a link for a Webropol questionnaire was sent by email to all the first-year business students who studied on a full-time basis on Mikkeli campus (N = 65). By opening the link, a student could answer the questions of the questionnaire at the beginning of classes. The data analysis was made as follows: First, the frequencies, means and standard deviations were examined by each variable. Then, the means of the variables were combined as the combined variables according to the four themes introduced above.

4. Results

There were 56 respondents of which 27 were male students and 29 female students. The majority of the respondents (n=26) were 21 or 22 years old. Further, 17 students were 20 years old or younger and 13 students were 23 years old or older.

4.1 Self-confidence and self-image

The students were asked about their self-confidence both directly and with two indirect statements. The mean of the statement "I am a self-confident person" was 4.0. The statement "I am the most important person for my own success" was used to ask the students about their perceptions of one’s own role for own success. The mean of this was 3.9. Further, the respondents were asked with a negative statement about their perceptions of other people’s interests (mean=2.3). The mean of the means of the statements related to the self-confidence and self-image was 3.4. Table 2 introduces the means of the statements related to self-confidence and self-image.

<table>
<thead>
<tr>
<th>Statements</th>
<th>n</th>
<th>Mean</th>
<th>Median</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a self-confident person.</td>
<td>56</td>
<td>4.0</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>I don’t care about other peoples’ interests.</td>
<td>56</td>
<td>2.3</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>I am the most important person for my own success.</td>
<td>55</td>
<td>3.9</td>
<td>4</td>
<td>0.8</td>
</tr>
</tbody>
</table>
4.2 Persistence and goal-orientation

The respondents were asked about their goal-orientation of the respondents directly with the statement I am a goal-oriented person”, and the mean of the statement was 3.9. There were also two further statements about how they perceive achieving goals: “I try hard to achieve the goals” and “When I start to work on something, I don’t give up until I have completed the task”. Both of the statements scored 3.8 as the mean. Further, the respondents were asked how willing they were to take risks, which also scored 3.8 as the mean. The statements related to achieving goals were “Reaching goals makes me happy” (mean=4.2) and “I like to get the job done” (mean= 4.5). The latter one scored the highest mean of the answers from all the statements of the study. The mean of the means of the statements related to persistence and goal-orientation was 4.04. Table 3 shows the means of the statements for persistence and goal-orientation.

<table>
<thead>
<tr>
<th>Statements</th>
<th>n</th>
<th>Mean</th>
<th>Median</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a goal-oriented person.</td>
<td>56</td>
<td>3.9</td>
<td>4</td>
<td>0.7</td>
</tr>
<tr>
<td>I try hard to achieve the goals.</td>
<td>56</td>
<td>3.8</td>
<td>4</td>
<td>0.7</td>
</tr>
<tr>
<td>When I start to work on something, I don’t give up until I have completed the task.</td>
<td>56</td>
<td>3.8</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>I like to get the job done.</td>
<td>56</td>
<td>4.5</td>
<td>5</td>
<td>0.6</td>
</tr>
<tr>
<td>Reaching goals makes me happy.</td>
<td>56</td>
<td>4.2</td>
<td>4</td>
<td>0.8</td>
</tr>
</tbody>
</table>

4.3 Creativity and initiativeness

First, creativity was approached from the perspective of resourcefulness with the statement of “I see limited resources as a challenge” (mean=3.2) and the statement of “I always find a solution to a problem at hand” (mean=3.3). The statements “I usually have many ideas” (mean=3.6) and “I am a creative person” (mean=3.2) were used to ask about creativity directly. The following two statements were used to ask about initiativeness of the respondents: “I take initiative in various situations” (mean=3.5) and “During group work, I wait for the others to take the first steps” (mean=3.9). The mean of the means of the statements related to creativity and initiativeness was 3.45. Table 4 presents the means of the statements of creativity and initiativeness.
Table 4. Means of the statements related to creativity and initiativeness

<table>
<thead>
<tr>
<th>Statements</th>
<th>n</th>
<th>Mean</th>
<th>Median</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I see limited resources as a challenge.</td>
<td>56</td>
<td>3.2</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>I always find a solution to a problem at hand.</td>
<td>55</td>
<td>3.3</td>
<td>3</td>
<td>0.7</td>
</tr>
<tr>
<td>I usually have many ideas.</td>
<td>56</td>
<td>3.6</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>I am a creative person.</td>
<td>56</td>
<td>3.2</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>I take initiative in various situations.</td>
<td>56</td>
<td>3.5</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>During group work, I wait for the others to take the first steps.</td>
<td>56</td>
<td>3.9</td>
<td>4</td>
<td>0.8</td>
</tr>
</tbody>
</table>

4.4 Uncertainty-tolerance

Uncertainty-tolerance of the respondents was examined related to their orientation to challenges, risks, mistakes and decision-making. First, the respondents were asked about their orientation towards challenges with positive statements: “I like challenges” (mean=3.7) and “I get excited in unusual situations” (mean=3.3). Then the respondents were asked about courage for risk-taking and orientation to failures with three statements: “I have the courage to take a step if I know where I am heading” (mean=4.0), “I have the courage to take calculated risks” (mean=4.0) and “I am not afraid of failure” (mean=3.1).

The respondents were asked about their perceptions towards mistakes with two statements “Mistakes are helpful for further development work” and “Mistakes can be useful”. Both of the statements scored 3.8 as the mean of the answers. In addition, there were two statements concerning decision-making: “I need to sleep it over before I make the final decision” (mean=2.8) and “Making decisions is easy for me” (mean=3.7). The mean of the means of the statements related to uncertainty-bearing attitudes was 3.58. Table 5 presents the means of the statements for uncertainty-tolerance.
4.5 Accuracy and responsibility

The themes related to accuracy and sense of responsibility comprised six statements. First, the respondents’ time competence was examined with two statements “I like deadlines” (mean=3.7) and “I am punctual” (mean=4.0). Orientation to planning and conducting tasks was studied with the statements “I have work routines and checklists” (mean=3.5) and “My planning is very detailed and exact” (mean=3.6). Sense of responsibility was examined with two statements: “I stick to the deadlines and terms” (mean=4.3) and “I understand possible consequences of my activities” (mean=3.9). The mean of the means of the statements related to accuracy and sense of responsibility was 3.83. Table 6 presents the means of the statements concerning the accuracy and sense of responsibility of the respondents.

Table 6. Means of the statements related to the accuracy and responsibility

<table>
<thead>
<tr>
<th>Statements</th>
<th>n</th>
<th>Mean</th>
<th>Median</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like deadlines.</td>
<td>56</td>
<td>3.7</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>I am punctual.</td>
<td>56</td>
<td>4.0</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>I have the courage to take a step, if I know where I am heading.</td>
<td>56</td>
<td>3.8</td>
<td>4</td>
<td>0.7</td>
</tr>
<tr>
<td>I am willing to take risks.</td>
<td>56</td>
<td>3.8</td>
<td>4</td>
<td>0.7</td>
</tr>
<tr>
<td>I have the courage to take calculated risks.</td>
<td>56</td>
<td>3.8</td>
<td>4</td>
<td>0.8</td>
</tr>
<tr>
<td>I am not afraid of failure.</td>
<td>56</td>
<td>3.1</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>Mistakes are helpful for further development work.</td>
<td>56</td>
<td>3.8</td>
<td>4</td>
<td>0.8</td>
</tr>
<tr>
<td>Mistakes can be useful.</td>
<td>56</td>
<td>3.8</td>
<td>4</td>
<td>0.7</td>
</tr>
<tr>
<td>I need to sleep it over before I make the final decision.</td>
<td>56</td>
<td>2.8</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>Making decisions is easy for me.</td>
<td>56</td>
<td>3.7</td>
<td>4</td>
<td>0.8</td>
</tr>
</tbody>
</table>
4.6 Social skills

The statements of social skills consisted of three topics and each of them had three statements. According to the findings, the students are open for cooperation (mean=4.3). However, they do not believe so strongly that they could achieve more with a team (mean=3.3). The respondents were asked about their flexibility indirectly with the statement “I stick to my own personal principles” (mean=4.1) and directly “I am flexible” (mean=3.8).

Trust with other people was examined with two statements: “I trust other people” (mean=3.7) and “It is easy for me to delegate” (mean=3.6). Further, the respondents were asked about their ability to influence other people with two statements “Other people tend to listen to me” (mean=3.7) and “I can convince other people of my ideas” (mean=3.3). The mean of the means of the statements related to the social skills was 3.73. Table 7 introduces the means of the statements of the social skills.

<table>
<thead>
<tr>
<th>Statements</th>
<th>n</th>
<th>Mean</th>
<th>Median</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can achieve more with a team.</td>
<td>56</td>
<td>3.3</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>I am open for cooperation.</td>
<td>56</td>
<td>4.3</td>
<td>4</td>
<td>0.7</td>
</tr>
<tr>
<td>I stick to my own personal principles.</td>
<td>56</td>
<td>4.1</td>
<td>4</td>
<td>0.6</td>
</tr>
<tr>
<td>I am flexible.</td>
<td>56</td>
<td>3.8</td>
<td>4</td>
<td>0.8</td>
</tr>
<tr>
<td>I trust people.</td>
<td>56</td>
<td>3.7</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>It is easy for me to delegate.</td>
<td>56</td>
<td>3.6</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>Other people tend to listen to me.</td>
<td>56</td>
<td>3.7</td>
<td>4</td>
<td>0.8</td>
</tr>
<tr>
<td>I can convince other people of my ideas.</td>
<td>56</td>
<td>3.3</td>
<td>3</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Table 7: Means of the statements related to the social skills

5. Summary and conclusions

This study was conducted in the beginning of the business students’ second semester. It was carried out with a questionnaire including 38 statements related to six main themes related to entrepreneurial characteristics introduced in Table 8. All in all, the first-year business students’ perceptions of the generic competences seem to be at quite a high level.
It is worth emphasising that this study focused on the perceptions of generic competences. In other words, the generic competences of the students were not measured or documented in any way but assessed by the students themselves. Nevertheless, the findings provide a solid foundation for the further follow-up studies that will be carried out annually in order to compare the development until these students’ graduation.

Finally, the objective is not to generalise the results beyond this student group. However, this study and its results will be used in a multinational context not only to compare the findings between different nationalities, but also to find out the similarities on business students’ generic competences beyond the nationalities in the beginning of their studies. What it will reveal eventually, remains to be seen later.

**REFERENCES**


---

<table>
<thead>
<tr>
<th>Main themes</th>
<th>Number of statements</th>
<th>Mean of the means</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Self-confidence and self-image</td>
<td>3</td>
<td>3.40</td>
</tr>
<tr>
<td>2. Persistence and goal-orientation</td>
<td>5</td>
<td>4.04</td>
</tr>
<tr>
<td>3. Creativity and initiativeness</td>
<td>6</td>
<td>3.45</td>
</tr>
<tr>
<td>4. Uncertainty bearing attitudes</td>
<td>10</td>
<td>3.58</td>
</tr>
<tr>
<td>5. Accuracy and responsibility</td>
<td>6</td>
<td>3.83</td>
</tr>
<tr>
<td>6. Social skills</td>
<td>8</td>
<td>3.73</td>
</tr>
</tbody>
</table>


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