



Erasmus+

PUNC SURVEY REPORT

May 2021/ Turku University of Applied Sciences

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1. INTRODUCTION OF A SURVEY

Working and living in a world that has been described as Volatile, Uncertain, Complex, and Ambiguous, (VUCA) is something that none of us can avoid and thus we need to learn to transform the threats of it to opportunities. To respond to this need, the ambitious aim of the PUNC (Professional **UN**certainty **C**ompetence) project is to fill the competence gap of handling uncertainty productively. To outline what the VUCA environment means in education and what are those VUCA design elements in pedagogical contexts, we can map the best practices for designing these kind of learning environments in higher education and thus supporting educators to train resilient professionals who can engage their professional uncertainty in a positive and productive manner. This has also been the triggering idea for supporting the educators in developing their work.

To understand better VUCA learning environments and specific design elements in those a survey was conducted, and responses analyzed to understand this better from a point of view of educators (teachers and students). This survey report gives insight on survey results and explains more what these VUCA design elements are. The survey report is one of intellectual outcomes of the PUNC project, "IO1: A map of best practices for VUCA learning environments".

2. THE SURVEY RESULTS

This survey contains both mixed quantitative and qualitative online survey data which explores the educators' perceptions and thoughts when acting in educators' role and planning the work in VUCA learning environments.

2.1 The survey participants

To understand better what kind of learning environment VUCA is, a survey was conducted in five different European countries (Denmark, Finland, Holland, Poland, and Spain) representing five HEIs. The survey respondents were gathered from following HEIs.

Denmark: Business Academy Aarhus (AA)
 Holland: University of Applied Sciences Utrecht (HU)
 Spain: Valencia Polytechnic University (UPV)
 Finland: Turku University of Applied Sciences (Turku UAS)
 Poland: University of Gdansk (UG)

The survey conducted during February 2021 and in total of 177 responses were collected by using Webropol online platform. the respondents' numbers per HEI organization of the survey are shown in figure 1.

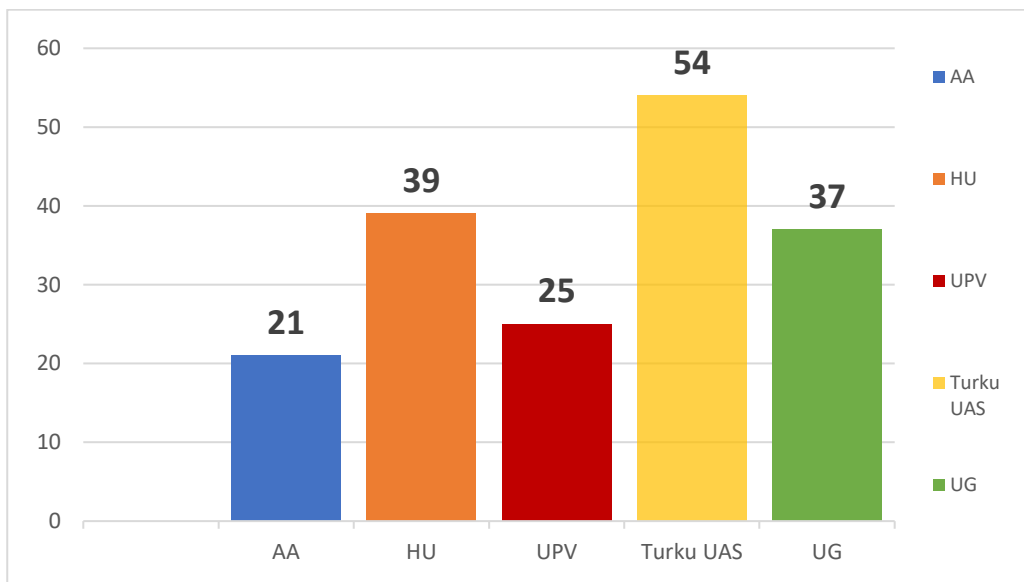


Figure 1. Respondents number per HEI

These five HEIs represented 13 different learning environments which were identified in separate workshops of educational experts from partner institutions as a VUCA learning environments.

Denmark: Business Academy Aarhus:
 Learning environments: Experts in Teams, Character Skills

Holland: University of Applied Sciences Utrecht:
 Learning environments: Learning Teams, DARE!

Spain: Valencia Polytechnic University:
 Learning environment: Building Startups (Business Economics)

Finland: Turku University of Applied Sciences:
 Learning environments: Project Hatchery, Leading a Group, Innovation Project,
 Project Based Learning environments (in total 5 LEs),

Poland: University of Gdansk:
 Learning environments: Research Project Course, Course Seminar, Workshop

The VUCA learning environments and respondents per HEIs are presented in below figure 2.

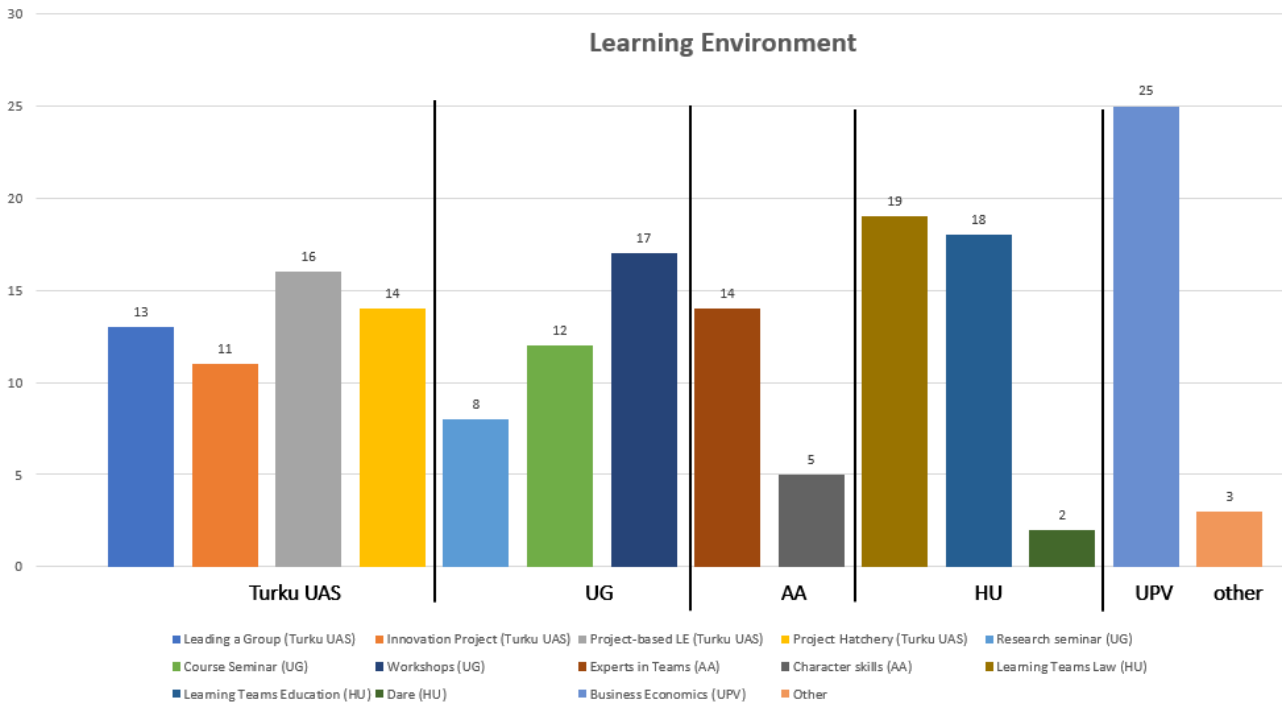


Figure 2. VUCA learning environments per respondents.

2.2 Roles of the respondents

The respondents of the surveys were both educators in teaching roles (153) and students (23) who acted as an educator role. The student educator respondents are only from Turku University of Applied Sciences. One of the respondents did not inform exact role. (Table 1)

Table 1. Roles of the respondents

		Role			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Educator	153	86,4	86,9	86,9
	Student	23	13,0	13,1	100,0
	Total	176	99,4	100,0	
Missing	System	1	,6		
Total		177	100,0		

2.3 Experience of the educators

The survey revealed that participants are very experienced in teaching. The educators are very professionally experienced as most of them (70.5%) have more than 10 years working experience, approximately one quarters (19.5%) have 6-9 years' experience, and minority (10%) have 1-5 years of working experience as an educator, like illustrated in figure 3.

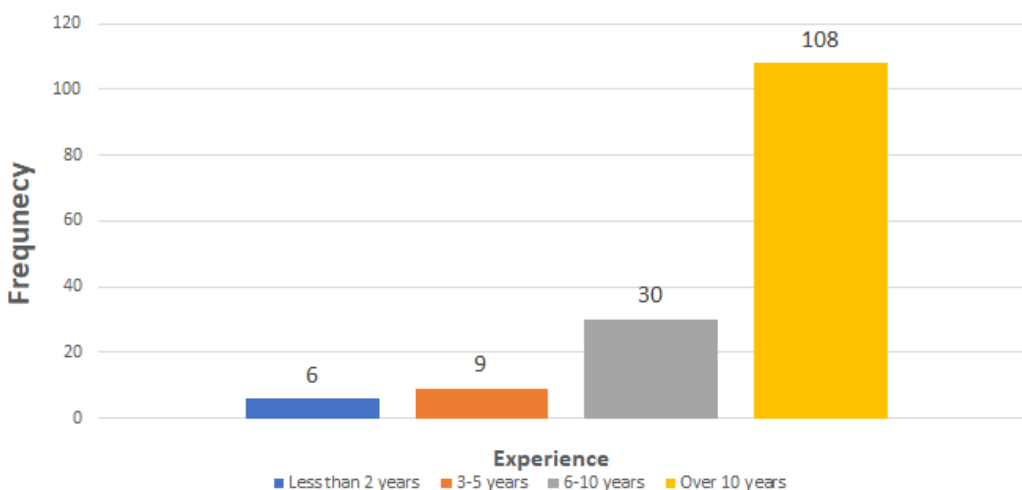


Figure 3. Educators working experience as years

To describe the feelings when working as an educator in a VUCA learning environment, the educators were asked to evaluate following experiences: meaningful, enhancing my competence as an educator, inspiring, rewarding, challenging, uncertain, stressing, motivational, insufficient, and

confusing in the context of that learning environment. The educators gave completely agree or somewhat agree answers to the variables, challenging, motivational, rewarding, inspiring, and enhancing my competence as an educator. The answers to describing the learning environment as stressing or confusing were completely disagreed or somewhat disagreed. In other words, it seems that although working in hybrid learning environment can be very challenging for an educator, at the same time, it is also a motivational, rewarding, and inspiring environment to work, which also enhances educators' competence considerably. Generally speaking, the educators seem to be satisfied with learning environments they have as shown in the figure 4 below.

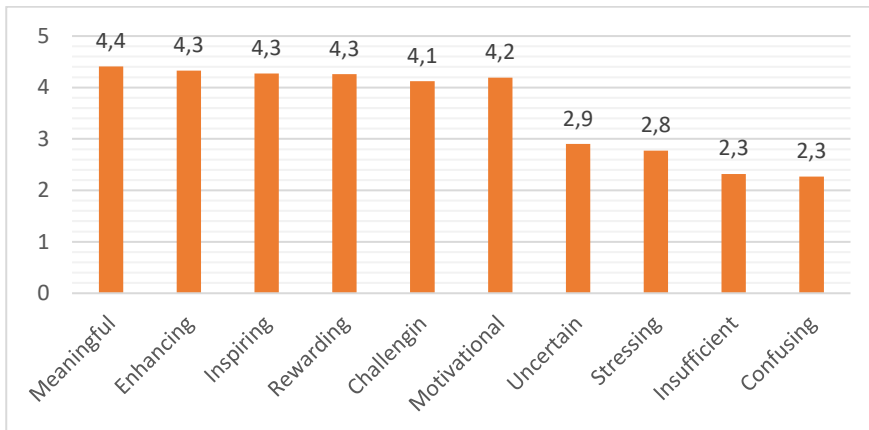


Figure 4. Experience as an educator.

3. VUCA DESIGN ELEMENTS

Learning and working process can be merged, and learners can not only simultaneously learn and work, but also grow into community practice. These kind of intentionally designed hybrid learning-environments at the boundary of university and working-life facilitate communication between both contexts. They also include authentic goal-directed work activities or centrality of real-life work tasks. Additionally, physical settings in which learners can practice and be guided by experts from occupational practice and the variety of roles that actors fulfil in a learning environment are key elements as well.¹ These components can be designed in more concrete level by applying epistemic, physis, social, and temporal elements in design.

The results of the survey were divided into four design elements which are **epistemic elements**, **spatial & institutional elements**, **social elements**, and **temporal elements** in each one of them group of questions need to be answered by the educators.

Based on the three highest means in each of the learning environments that were represented in the survey, the results indicates that as an educator it is important to:

1. encourage students to think creatively (Epistemic elements 12/13). to support students to reflect on the actions and consequences of acting when working with the tasks/assignments (Epistemic elements 11/13).
2. to show good practices (Social elements 10/13).
3. to provide a learning environment where complex issues are relatively safe to be handled as students are supported by the educator (Spatial & Instrumental elements 9/13)
4. to allow that learning can take place both in personal and professional contexts (Spatial & Instrumental elements 9/13).
5. to trust each other (Social elements 8/13).
6. those students learn to tolerate the presence of uncertainty in the learning environment (Epistemic elements 8/13).

Note: The scale was used in the survey from 1 to 6.

The survey scale: 1 completely disagree, 2 somewhat disagree, 3 neither agree nor disagree, 4 somewhat agree, 5 completely agree, 6 I cannot evaluate because this is not present in this learning environment. We ignored the scale number 6 because its not suitable answer for some questions in the survey for that the analysis estimations was between 1 and 5.

3.1 Epistemic elements

Epistemic elements of a learning environment design are the task characteristics and the task arrangement. These elements are based on the needed competence that is seen as meaningful in the relevant domain. Supporting students to learn a vocation, epistemic elements are related to the occupation for which learners are being prepared; how people engage in work practice and what that practice affords to learners can have consequences for what they learn, what kind of tasks learners are supposed to engage in, and what kind of information they need to perform those tasks.

The below table 2 shows what are the most important actions of educator regarding epistemic elements.

Table 2. Epistemic elements and three highest means of the learning environments.

<i>To enable students' learning in the selected learning environment according to my experience, as an educator it is important...</i>	Mean (all respondents)
To avoid giving clear instructions	2,54
To avoid providing clear patterns	2,94
To allow lack of info	2,72
To allow unexpected changes	3,53
To trust students' capability	4,19
Support students to reflect	4,52
To allow unclear expectations	2,95
Emphasize that there is no right or wrong answers	3,78
Encourage the students that not- knowing is important	4,17
To encourage the students to think creatively.	4,72
To encourage mistakes in tasks/assignments	3,78
Students learn to tolerate the presence of uncertainty	4,33
	N 152-172

3.2 Spatial and instrumental elements

Spatial and instrumental elements consist of physical features. Spatial elements are the location (university, work or third location), spaces (analogue or digital) and how these spaces are furnished (e.g., as professional workspaces or as traditional classroom spaces). Instrumental features include all tools and artefacts needed to perform relevant tasks.

The below table 3 shows what are the most important actions of educator regarding spatial and instrumental elements.

Table 3. Spatial and instrumental elements and three highest means of the learning environments.

<i>To enable students' learning in the selected learning environment, according to my experience, as an educator it is important...</i>	Mean (all respondents)
To meet regularly with the student	4,01
To encourage students to decide their meeting places.	3,75
Provide an environment where complex issues are relatively safe.	4,39
Allow that learning can take place both in personal and professional contexts.	4,26
To apply digital communication tools	4,28
To mirror a professional workplace at the university	3,50
Simulate authentic professional work practices with structures and rules.	3,76
To simulate authentic professional work practices with tools	3,79
To cross the borders of university and working life	4,21
	N 153-164

3.3 Social elements

Social elements consist of all actors present in a learning environment, the roles that they fulfil, such as educational roles (e.g., coach, learner, assessor) and roles related to the profession (e.g., junior or senior colleague, or managerial roles), how actors might interact, how they are grouped and what tasks are appointed to and divided between different actors (i.e., the division of labor).

The below table 4 shows what are the most important actions of educator regarding social elements.

Table 4. Social elements and three highest means of the learning environments.

<i>To enable students' learning in the selected learning environment, according to my experience, as an educator it is important...</i>	Mean (all respondents)
To form fixed teams	3,79
To engage students in working with different professional roles	3,98
To let the students lead.	4,41
To give room for turbulence in the team dynamic	4,11
To trust each other	4,58
To learn together	3,80
To have external stakeholders	3,70
To give support only when needed.	3,82
To act as a senior colleague	4,41
To act as a reflection facilitator.	4,17
That the student becomes the director of their learning.	4,14
To use peer- or team-based methods.	4,65
To show good practices	3,79
	N 147-167

3.4 Temporal elements

Temporal elements illuminate the importance of considering affordances related to timespan and intensity of the program, nature of the time schedule, work pace (including amount of time pressure), and work interruptions to slow down, accelerate or pause the work process for educational purposes.

The below table 5 shows what are the most important actions of educator regarding temporal elements.

Table 5. Temporal elements and three highest means of the 13 learning environments.

	Mean (all respondents)
To give starting and ending dates but keep the schedule open.	3,77
To avoid giving exact milestones	2,45
Students must prepare a complex and tight schedule by themselves	2,99
Give students a freedom to plan their pace etc.	3,58
That there are regular meetings with different intensity	3,55
To use preplanned work interruptions	3,75
To support work on the fly	3,38
To allow many temporal matters to change	3,23
To push students working under pressure in terms of time	3,24
To follow a work-like schedule	2,97
To be flexible according to the clients' timetables or other wishes.	3,61
To constantly monitor students' work pace, time schedule, breaks, intensity.	2,58
	N 147-167

4. THE DESIGN ELEMENTS RESULTS BETWEEN THE HEIs' LEARNING ENVIRONMENTS

The results and differences among each of the learning environments design elements are presented in the following section. We have summarized the highest and the lowest means given in each HEIs in the following sections.

4.1 Differences between epistemic elements in the partner HEIs' learning environments

Looking at a survey results differences between learning environments' epistemic elements questions were about the communications, supporting and encouragement between the educator and students like supporting students to reflect and encourage the students to think creatively etc.

Turku University of Applied Sciences:

In Turku UAS learning environments (leading a group, innovation project, project based LE, and project hatchery) the epistemic elements answers are based on the mean(average) as follows. Highest elements were given to: encourage the students to think creatively: 4.83 for leading a group, 4.67 for innovation project, 5.00 for project based LE, and finally 4.77 for project hatchery.

The lowest elements were given to: avoid giving clear instructions: 2.67 for Leading a group, 3.55 for Innovation project, 2.88 for Project based LE, and 3.42 for project hatchery

Aarhus Business Academy:

For the epistemic elements in Aarhus the answers for two learning environments (Experts in teams and Character skills), the results were as follows:

The highest elements were given to: support students to reflect: 4.91 for Experts in teams and 5.00 for Character skills

The lowest elements were given to: avoid giving clear instructions: 3.14 for Experts in teams and 2.40 for Character skills

University of Applied Sciences Utrecht:

For the epistemic elements in HU the answers for three learning environments (Learning teams law, Learning teams education, and Dare!), the results were as follows:

The highest means were given to: encourage the students to think creatively: 4.65 for Learning teams law, 4.84 for Learning teams education, and 5.00 for Dare!.

The lowest means were given to: avoid giving clear instructions: 2.41 for Learning teams law, 3.00 for Learning teams education, and 3.50 for Dare!

University of Gdansk:

For the epistemic elements in UG the answers for three learning environments (Research seminar, Course seminar, and Workshops) the results were as follows:

The highest means were given to: support students to reflect: 4.75 for Research seminar, 4.55 for Course seminar, and 4.53 for Workshops.

The lowest means were given to: avoid giving clear instructions: 2.25 for Research seminar, 1.92 for Course seminar, and 1.94 for Workshops was the lowest means

Valencia Polytechnic University:

For the epistemic elements in UPV the answers for one learning environments, Building Startups the results were as follows:

The highest mean 4.58 were given for to: encourage the students to think creatively.

The lowest mean 1.48 were given to: avoid providing clear patterns

4.2 Differences between spatial & institutional elements in the partner HEIs' learning environments

Spatial & Institutional elements were tested by asking questions e.g. about meeting regularly with the students, are you encourage students to decide their meeting places, allow that learning can take place both in personal and professional contexts, and apply digital communication tools which means question in communication category. So, the answer we got from five universities is going to be introduced as:

Turku University of Applied Sciences:

The highest means were given to: allow that learning can take place both in personal and professional contexts: 4.64 for Leading a group, 4.60 for Innovation project, 4.60 for Project based LE, and 4.62 for Project hatchery.

The lowest means were given to: mirror a professional workplace at the university: 3.62 for Leading a group, 3.20 for Innovation project, 4.33 for Project based LE, and finally 3.45 for Project hatchery

Aarhus Business Academy:

The highest means were given to; provide an environment where complex issues are relatively safe: 4.17 for Experts in teams and 4.67 for Character skills.

The lowest means were given to; simulate authentic professional work practices with tools: 3.58 for Experts in teams and 3.20 for Character skills.

University of Applied Sciences Utrecht:

The highest means were given to: allow that learning can take place both in personal and professional contexts: 4.28 for Learning teams law, 4.64 for Learning teams education, and 5.00 for Dare!

The lowest means were given to: mirror a professional workplace at the university: 3.79 for Learning teams law, 3.71 for Learning teams education, and 3.00 for Dare!

University of Gdansk

The highest means were given to: provide an environment where complex issues are relatively safe element: 4.50 for Research seminar, 4.33 for Course seminar, and 4.38 for Workshops

The lowest means were given to: simulate authentic professional work practices with structures and rules: 3.40 for Research seminar, 3.36 for Course seminar, and 3.71 for Workshops

Valencia Polytechnic University

The highest mean 4.83 was given to learning environment Building Startups: cross the borders of university and working life

The lowest mean 2.30 in Building Startups learning environment was given to: simulate authentic professional work practices with tools

4.3 Differences between social elements in the partner HEIs' learning environments

In the social elements section, the educators were asked about team formations, team dynamics, roles in teams (educator, students, external stakeholders) as well as trusting and learning in teams.

Turku University of Applied Sciences:

The highest means were given to: show good practices: 4.67 for Leading a group, 4.78 for Innovation project, 4.92 for Project based LE, and 4.73 for Project hatchery.

The lowest means were given to: have external stakeholders: 3.38 for Leading a group, 3.69 for Innovation project, 3.69 for Project based LE, and 3.38 for Project hatchery

Aarhus Business Academy:

The highest means were given to: trust each other 4.91 for Experts in teams and 5.00 for Character skills.

The lowest means were given to: learn together: 4,17 for Experts in teams and 2,75 for Character skills.

University of Applied Sciences Utrecht:

The highest means were given to: act as a senior colleague: 4.72 for Learning teams law, 4.85 for Learning teams education, and 5.00 for Dare!

The lowest means were given to: have external stakeholders: 3.78 for Learning teams law, 3.71 for Learning teams education, and 2.50 for Dare!

University of Gdansk

The highest means were given to: use peer- or team-based methods: 4.88 for Research seminar, 4.64 for Course seminar, 4.62 and for Workshops

The lowest means were given to: give support only when needed: 3.62 for Research seminar, 3.50 for Course seminar, and 4.00 for Workshops

Valencia Polytechnic University

The highest mean 4.70 was given to: use peer- or team-based methods for Building Startups

The lowest mean was given to: learn together: 1.96 for Building Startups

4.3 Differences between temporal elements in the partner HEIs' learning environments

Temporal elements are related to timing and educators were asked e.g. how they see the importance of deadlines, meetings, pre-planned work interruptions and time schedules. Also was asked that in what extent the students have freedom to plan their own schedule, should there be time pressure from educator and flexibility about temporal matters.

Turku University of Applied Sciences:

The highest means were given to: give starting and ending dates but keep the schedule open: for 4.08 Leading a group, 4.40 for Innovation project, 4.25 for Project based LE, and 4.23 for Project hatchery.

The lowest means were given to: constantly monitor students' work pace, time schedule, breaks, intensity: 3.00 for Leading a group, 2.60 for Innovation project, 2.67 for Project based LE, and for 2.17 Project hatchery

Aarhus Business Academy:

The highest means were given to: That there are regular meetings with different intensity: 4.36 for Experts in teams and 4,25 for Character skills.

The lowest means were given to: constantly monitor students' work pace, time schedule, breaks, intensity: 2.17 for Experts in teams and for 2.75 Character skills.

University of Applied Sciences Utrecht:

The highest means were given to: give starting and ending dates but keep the schedule open: 3.94 for Learning teams law, 4.13 for Learning teams education, and 5.00 for Dare!

The lowest means were given to: follow a work-like schedule: 2.92 for Learning teams law, 2.93 for Learning teams education, and 2.00 for Dare!

University of Gdansk

The highest means were given to: use preplanned work interruptions: 4.00 for Research seminar, 3.67 for Course seminar, and 3.93 for Workshops

The lowest means were given to: avoid giving exact milestones: 2.13 for Research seminar, 1.73 for Course seminar, and 2.19 for Workshops

Valencia Polytechnic University

The highest mean was given to: use preplanned work interruptions: 3.22 for Building Startups

The lowest mean was given to: follow a work-like schedule: 1.54 for Building Startups

Note: The detailed survey results per learning environments are presented in Appendix 1.

4.4 Survey's qualitative data: open answers

In addition to background questions and designing elements Likert-scale questions. The survey contained six open answer parts, which in educators had possibilities to describe more specifically their perceptions and opinions of important elements in enabling students' learning in hybrid learning environments. In total 150 respondents left comments to open answers text parts. The open answers qualitative data was analysed with the thematic analysis and open coding was used to create labels for themes that summarize respondents' thought and experiences in words or phrases. Next, is raised the key points which educators highlighted in their answers.

Based on the open data results, in VUCA learning environments educators are often thinking about suitable balance in giving guidance and instructions, and on the other hand not over instruct but giving enough freedom to students to organize, solve problems and arrange the tasks. Some learning environments are fundamentally made for exploration and trial and error type of work, where more freedom and less guidance are given to the students. Other learning environments may require clearer tasks, solid structure, and well-defined goals for desired outcomes to actualize, otherwise the learning process may end up being too chaotic. For educators, finding a right balance between the control and freedom is not always an easy task to solve.

Educators pointed out that *learning by doing is the best practice to enhance the skills* that are needed in working life. The students who learn to ask why, when, and how and can use creativeness, flexibility and adaptiveness skills are the ones who do well in a real world too. When learning

environment offer possibilities to practice problem-solving skills and working in versatile teams, it creates important skills for working life and makes students better in terms of their future jobs.

Encouraging and explaining to students *that not-knowing, is the very important aspect of the learning process*. Learning is about exploring knowledge and an educator is a facilitator of this process. Educators see that their *role is to support* when things are getting difficult and the students are stuck but otherwise, students must be very active themselves in problem solving and to try out how to manage tasks themselves. In this way, the students can make mistakes and learn from those but still get results. By giving the students enough room and flexibility to make their own decisions will enhance their creativity and increase knowledge. Educators are thinking that mistakes and uncertainty of how things should be made are usually more acceptable in learning environment than in actual work situation. Therefore, *it is essential to make mistakes and learn how to deal and solve those first in safe learning environments*.

From educators' point of view *uncertainty is an element which is a necessary factor for learning purposes*. To make an essential leap in learning, students need to come out of their comfort zone. However, they also need enough safeness, like structures, encouragement, and skills to face the uncertainty. Skills of tolerating uncertainty is one of the most essential ones, not just in learning contexts but also in context of life. Uncertainty is part of daily life, both personal and professional wise. In learning environments some VUCA components emerge as a surprise in the process of working. These may be based on internal issues of the group as well as on outside-in events or actions of other stakeholders. When students learn to work in a changing and a somewhat chaotic settings, this prepares them to manage with real life.

In the survey, the educators described their role as being more like the one who sets a right learning direction of a learning process, provides support and guidance to the students in the work process. The role could be described *more like an advisor and facilitator, than a director*. An educator is the one who keep an eye on that learning goes in a productive direction. Too much detailed instructions and teacher-centricity can lead to the passiveness of the students. Thus, being an educator, it is important to find a balance in steering, guiding, trusting, asking and even in when to let go. Naturally is good to remember that opposite things don't necessarily contradict each other. *Allowing mistakes, and encouragement for creativity doesn't mean that clear instructions should not be given*.

Students learn from, with and through each other, and doing and learning together is much more effective than someone telling exactly what to do. Educators' role is to inspire and stimulate the students as well as show good practices but also give enough space for their own thinking and learning in students' own rhythm. By preparing everything well an outcome may be too much "teacher desirable". Perhaps more important is to understand that an educator may have a clear vision of the outcomes but there are many solutions and paths to solve problems. If an educator primes too much, students will not start genuinely think about themselves and an outcome *can be much less creative than what it could have been*.

Educators emphasized that *creativity and creative thinking are the engines of a learning development*. Students can be very creative in constructing their knowledge. An educator should encourage creativity and creative thinking and let students form their own opinions and reflect their actions and outcomes, so that students are able to apply different techniques for creative problem solving. For a creative process to be successful it is important that the students have freedom to

move in different directions. Albeit the process might be controlled, but the way to move, is better to keep relatively free.

Diversity in learning teams is seen an important tool for broadening the vision of the learner. Working together allows students to learn from each other, construct knowledge and discover new things together, but also make mistakes and find a way to correct those and make progress in learning. Working with others provides possibility for encounter uncertainty, especially when others are unfamiliar people. Very often many students at the beginning of the course are very shy, and they need some time to start working together. Working together and being responsible for results increase trust and students can learn to trust themselves and other team members. Teamwork enables students to develop communication skills and to understand the meaning of being an active agent of their own learning, as well as developing self-management and leading skills.

APPENDIX 1 Detailed results per HEIs

Denmark/ Aarhus Business Academy

<i>Epistemic elements</i>	Experst in Teams	Character skills
To avoid giving clear instructions	3,14	2,4
To avoid providing clear patterns	3,38	3
To allow lack of info	3,31	2,8
To allow unexpected changes	4	3,6
To trust students' capability	4,82	4,75
Support students to reflect	4,91	5
To allow unclear expectations	3,54	3,4
Emphasize that there is no right or wrong answers	4,42	4,67
Encourage the students that not- knowing is important	4,33	5
To encourage the students to think creatively.	5	3
To encourage mistakes in tasks/assignments	4,25	4
Students learn to tolerate the presence of uncertainty	4,83	3
	N 11-14	N 3-5
<i>Spatial & instrumental elements</i>	Experst in Teams	Character skills
To meet regularly with the student	3,92	4,5
To encourage students to decide their meeting places	4	4
Provide an environment where complex issues are relatively safe	4,17	4,67
Allow that learning can take place both in personal and professional contexts.	4,42	4,25
To apply digital communication tools	3,69	3
To mirror a professional workplace at the university	3,7	3,4
Simulate authentic professional work practices with structures and rules	3,92	3,4
To simulate authentic professional work practices with tools	3,58	3,2
To cross the borders of university and working life	4,31	4
	N 10-13	N 2-5
<i>Social elements</i>	Experst in Teams	Character skills
To form fixed teams	4,69	4,4
To engage students in working with different professional roles	4,45	4,2
To let the students lead.	4,77	4,8
To give room for turbulence in the team dynamic	4,75	5

To trust each other	4,91	5
To learn together	4,17	2,75
To have external stakeholders	3,75	4,2
To give support only when needed.	4,17	4,4
To act as a senior colleague	4,92	4,67
To act as a reflection facilitator.	4,64	5
That the student becomes the director of their learning.	4,58	4,25
To use peer- or team-based methods.	4,31	4,8
To show good practices	4,64	5
	N 11-13	N 3-5
<i>Temporal elements</i>	Experst in Teams	Character skills
To give starting and ending dates but keep the schedule open.	4,55	3,8
To avoid giving exact milestones	2,83	2,8
Students must prepare a complex and tight schedule by themselves	3,79	3,8
Give students a freedom to plan their pace etc.	4,15	4,2
That there are regular meetings with different intensity	4,36	4,25
To use preplanned work interruptions	4,33	4,25
To support work on the fly	4,27	4,25
To allow many temporal matters to change	3,09	4,33
To push students working under pressure in terms of time	3,64	4,25
To follow a work-like schedule	3,64	4,5
To be flexible according to the clients timetables or other wishes.	3,67	4
To constantly monitor students' work pace, time schedule, breaks, intensity.	2,17	2,75
	N 11-14	N 3-5

Holland/ University of Applied Sciences Utrecht

<i>Epistemic elements</i>	Learning Teams Law	Learning Teams Educ	Dare
To avoid giving clear instructions	2,41	3	3,5
To avoid providing clear patterns	2,83	3,22	3,5
To allow lack of info	3,33	3,29	4
To allow unexpected changes	4,12	4,18	5
To trust students' capability	4,53	4,37	4
Support students to reflect	4,65	4,83	4
To allow unclear expectations	3,44	3,82	4
Emphasize that there is no right or wrong answers	3,94	4,31	4
Encourage the students that not- knowing is important	4,47	4,62	4
To encourage the students to think creatively.	4,65	4,85	5
To encourage mistakes in tasks/assignments	4,35	4,4	5

Students learn to tolerate the presence of uncertainty	4,76	4,71	5
	N 17-18	N 12-18	N 1-2
<i>Spatial and instrumental elements</i>	Learning Teams Law	Learning Teams Educ	Dare
To meet regularly with the student	4,06	3,63	3
To encourage students to decide their meeting places	4,17	4,5	5
Provide an environment where complex issues are relatively safe	4,24	4,27	5
Allow that learning can take place both in personal and professional contexts.	4,28	4,64	5
To apply digital communication tools	4,24	3,94	5
To mirror a professional workplace at the university	3,79	3,71	3
Simulate authentic professional work practices with structures and rules	4,06	3,75	3
To simulate authentic professional work practices with tools	4,15	4	3,5
To cross the borders of university and working life	3,79	4,36	5
	N 13-18	N 14-17	N 1-2
<i>Social elements</i>	Learning Teams Law	Learning Teams Educ	Dare
To form fixed teams	3,88	4	5
To engage students in working with different professional roles	4,18	4	5
To let the students lead.	4,06	4,63	5
To give room for turbulence in the team dynamic	4,59	4,5	5
To trust each other	4,72	4,79	5
To learn together	4	3,94	4
To have external stakeholders	3,78	3,71	2,5
To give support only when needed.	4	3,87	4
To act as a senior colleague	4,72	4,85	5
To act as a reflection facilitator.	4,61	4,79	5
That the student becomes the director of their learning.	4,44	4,71	5
To use peer- or team-based methods.	4,5	4,47	4,5
To show good practices	4,71	4,77	5
	N 16-18	N 13-17	N 1-2
<i>Temporal elements</i>	Learning Teams Law	Learning Teams Educ	Dare
To give starting and ending dates but keep the schedule open.	3,94	4,13	5
To avoid giving exact milestones	2,24	3,27	3
Students must prepare a complex and tight schedule by themselves	3,12	3,06	4,5
Give students a freedom to plan their pace etc.	3,82	4,24	3,5

That there are regular meetings with different intensity	3,64	3,76	4
To use preplanned work interruptions	3,73	3,85	4,5
To support work on the fly	3,38	3,93	3
To allow many temporal matters to change	3,86	3,33	4
To push students working under pressure in terms of time	3,06	3,38	4,5
To follow a work-like schedule	2,92	2,93	2
To be flexible according to the clients timetables or other wishes.	3,75	4,24	4
To constantly monitor students' work pace, time schedule, breaks, intensity.	2,67	2,75	4
	N 12-18	N 13-17	N 1-2

Finland/ Turku University of Applied Sciences

<i>Epistemic elements</i>	Leading a group	Innovation project	Project-based LE	Project Hatchery
To avoid giving clear instructions	2,67	3,55	2,88	3,42
To avoid providing clear patterns	3,5	3,6	3,27	4,15
To allow lack of info	2,69	3,55	3,06	2,46
To allow unexpected changes	4,23	4,09	4,07	3,91
To trust students' capability	4,5	4,5	4,64	4,5
Support students to reflect	4,33	4,55	4,86	4,75
To allow unclear expectations	3,5	3,45	3,13	3,5
Emphasize that there is no right or wrong answers	3,92	3,91	3,64	4,62
Encourage the students that not- knowing is important	4,62	4,18	4,47	4,58
To encourage the students to think creatively.	4,83	4,67	5	4,77
To encourage mistakes in tasks/assignments	4,33	3,8	4,2	4,33
Students learn to tolerate the presence of uncertainty	4,54	4,6	4,69	4,67
	N 12-13	N 9-11	N 13-16	N 11-13
<i>Spatial and institutional elements</i>	Leading a group	Innovation project	Project-based LE	Project Hatchery
To meet regularly with the student	4,55	3,44	3,44	4,67
To encourage students to decide their meeting places	4,33	4,6	3,93	3,58
Provide an environment where complex issues are relatively safe	4,69	4	4,43	4,62
Allow that learning can take place both in personal and professional contexts.	4,64	4,6	4,6	4,62
To apply digital communication tools	4,31	4,3	4,71	4,25
To mirror a professional workplace at the university	3,62	3,2	4,33	3,45
Simulate authentic professional work practices with structures and rules	4,38	4	4,77	4,55
To simulate authentic professional work practices with tools	3,92	4,5	4,67	3,91
To cross the borders of university and working life	4	4,4	4,71	4
	N 11-13	N 9-10	N 13-16	N 11-13
<i>Social elements</i>	Leading a group	Innovation project	Project-based LE	Project Hatchery

To form fixed teams	4,46	4,33	3,47	4,31
To engage students in working with different professional roles	4,54	4,5	4,33	4
To let the students lead.	4,42	4,67	4,71	4,17
To give room for turbulence in the team dynamic	4,08	4,2	4,19	4,18
To trust each other	4,42	4,56	4,77	4,5
To learn together	3,92	4,5	4,53	4,25
To have external stakeholders	3,38	3,69	3,69	3,38
To give support only when needed.	4,46	4,5	4,5	4,38
To act as a senior colleague	4,08	4,37	4,37	4,58
To act as a reflection facilitator.	4,08	4,3	4,43	4,54
That the student becomes the director of their learning.	4,08	4,5	4,2	4,23
To use peer- or team-based methods.	4,38	4,1	4,46	4,27
To show good practices	4,67	4,78	4,92	4,73
	N 12-13	N 9-10	N 13-16	N 11-13
<i>Temporal elements</i>	Leading a group	Innovation project	Project-based LE	Project Hatchery
To give starting and ending dates but keep the schedule open.	4,08	4,4	4,25	4,23
To avoid giving exact milestones	3	2,9	3	2,43
Students must prepare a complex and tight schedule by themselves	3,46	3,1	2,63	3,07
Give students a freedom to plan their pace etc.	4,23	3,67	4,31	4,07
That there are regular meetings with different intensity	3,77	4	3,69	3,92
To use preplanned work interruptions	3,83	3,2	3,81	3,79
To support work on the fly	3,77	3,5	3,56	4
To allow many temporal matters to change	3,67	3,4	3,69	3,54
To push students working under pressure in terms of time	3,85	3,7	3,56	4
To follow a work-like schedule	3,1	3,5	3,93	3,62
To be flexible according to the clients' timetables or other wishes.	4,25	4,5	4,47	3,55
To constantly monitor students' work pace, time schedule, breaks, intensity.	3	2,6	2,67	2,17
	N 10-13	N 9-10	N 15-16	N 11-14

Poland/ University of Gdansk

<i>Epistemic elements</i>	Research Seminar	Course Seminar	Workshops
To avoid giving clear instructions	2,25	1,92	1,94
To avoid providing clear patterns	2,75	3,09	2,53
To allow lack of info	2,25	2,33	2,33
To allow unexpected changes	3,13	2,91	3,47
To trust students' capability	4,13	4,36	3,67
Support students to reflect	4,75	4,55	4,53

To allow unclear expectations	2,38	2,4	2,81
Emphasize that there is no right or wrong answers	4,57	3,2	3,36
Encourage the students that not- knowing is important	3,75	4,27	3,87
To encourage the students to think creatively.	4,86	4,8	4,38
To encourage mistakes in tasks/assignments	2,87	4	3,85
Students learn to tolerate the presence of uncertainty	4,13	3,91	3,8
	N 7-8	N 10-12	N 13-17
<i>Spatial and instrumental elements</i>	Research Seminar	Course Seminar	Workshops
To meet regularly with the student	4,38	3,33	3,75
To encourage students to decide their meeting places	2,88	3,18	3,64
Provide an environment where complex issues are relatively safe	4,5	4,58	4,33
Allow that learning can take place both in personal and professional contexts.	4	4,27	3,79
To apply digital communication tools	4,75	4,33	4,38
To mirror a professional workplace at the university	3,57	3,78	3,62
Simulate authentic professional work practices with structures and rules	3,4	3,36	3,71
To simulate authentic professional work practices with tools	3,83	4,09	4,07
To cross the borders of university and working life	4	3,2	3,93
	N 5-8	N 9-12	N 13-16
<i>Social elements</i>	Research Seminar	Course Seminar	Workshops
To form fixed teams	3,8	3,56	3,77
To engage students in working with different professional roles	3,86	4,8	4,2
To let the students lead.	3,87	4,36	4,29
To give room for turbulence in the team dynamic	3,86	3,91	4
To trust each other	4,83	4,45	4,27
To learn together	4,25	3,78	4,5
To have external stakeholders	3,62	3,45	4,2
To give support only when needed.	3,62	3,5	4
To act as a senior colleague	4,13	4	4,56
To act as a reflection facilitator.	4,13	3,7	3,93
That the student becomes the director of their learning.	4,17	4	4,23
To use peer- or team-based methods.	4,88	4,64	4,62
To show good practices	4,63	4,4	4,54
	N 4-8	N 9-12	N 13-16
<i>Temporal elements</i>	Research Seminar	Course Seminar	Workshops
To give starting and ending dates but keep the schedule open.	3,38	4,2	3,69
To avoid giving exact milestones	2,13	1,73	2,19

Students must prepare a complex and tight schedule by themselves	2,88	2,82	2,77
Give students a freedom to plan their pace etc.	2,88	3,33	3,43
That there are regular meetings with different intensity	3,71	3,2	3,42
To use preplanned work interruptions	4	3,67	3,93
To support work on the fly	3,13	3,09	3,57
To allow many temporal matters to change	3,13	2,58	2,62
To push students working under pressure in terms of time	3	3,25	2,69
To follow a work-like schedule	2,63	2,91	2,69
To be flexible according to the clients' timetables or other wishes.	3,8	3,56	3,5
To constantly monitor students' work pace, time schedule, breaks, intensity.	3,5	2,73	2,8
	N 5-8	N 9-12	N 12-16

Spain: Valencia Polytechnic University

<i>Epistemic elements</i>	Business Economics
To avoid giving clear instructions	1,6
To avoid providing clear patterns	1,48
To allow lack of info	1,56
To allow unexpected changes	1,72
To trust students' capability	3,08
Support students to reflect	3,67
To allow unclear expectations	1,28
Emphasize that there is no right or wrong answers	2,64
Encourage the students that not- knowing is important	3,16
To encourage the students to think creatively.	4,58
To encourage mistakes in tasks/assignments	2,04
Students learn to tolerate the presence of uncertainty	3,48
	N 24-25
<i>Spatial and instrumental elements</i>	Business Economics
To meet regularly with the student	4,67
To encourage students to decide their meeting places	2,67
Provide an environment where complex issues are relatively safe	4,38
Allow that learning can take place both in personal and professional contexts.	3,43
To apply digital communication tools	4,54
To mirror a professional workplace at the university	2,67
Simulate authentic professional work practices with structures and rules	2,41
To simulate authentic professional work practices with tools	2,3
To cross the borders of university and working life	4,83
	N 22-25

<i>Social elements</i>	Business Economics
To form fixed teams	2,29
To engage students in working with different professional roles	2,17
To let the students lead.	4,33
To give room for turbulence in the team dynamic	3,08
To trust each other	4,3
To learn together	1,96
To have external stakeholders	3,75
To give support only when needed.	2,33
To act as a senior colleague	4,04
To act as a reflection facilitator.	3,08
That the student becomes the director of their learning.	2,95
To use peer- or team-based methods.	4,7
To show good practices	4,43
	N 23-24
<i>Temporal elements</i>	Business Economics
To give starting and ending dates but keep the schedule open.	2
To avoid giving exact milestones	1,67
Students must prepare a complex and tight schedule by themselves	2,33
Give students a freedom to plan their pace etc.	1,78
That there are regular meetings with different intensity	2,29
To use preplanned work interruptions	3,22
To support work on the fly	1,92
To allow many temporal matters to change	2,75
To push students working under pressure in terms of time	2
To follow a work-like schedule	1,54
To be flexible according to the clients timetables or other wishes.	1,75
To constantly monitor students' work pace, time schedule, breaks, intensity.	1,88
	N 23-24

APPENDIX 2 The PUNC survey

Survey for Educators

This survey is part of Erasmus+ EU funded project called PUNC (Professional Uncertainty Competence).

The aim of the survey is to collect educators perspectives and opinions of specific learning environments in higher education from five European partner countries. The results of survey will be used in part of the research activities in the PUNC project and generally developing and researching of the higher education.

All the answers will be processed anonymously and confidentially. An individual respondent's answers cannot be identified in the analyses or final reports.

1. Select ONE learning environment wherein you have been working as an educator *

- Innovation camp (Innocamp PL)
- Experts in Teams (Aarhus)
- Character skills (Aarhus)
- Learning Teams Law (HU)
- Learning Teams Education (HU)
- Dare! (HU)
- Explorer (UPV)
- Business Economics (UPV)
- Project Hatchery (Turku UAS)
- Leading a Group (Turku UAS)
- Innovation Project (Turku UAS)
- Project-based learning environments e.g., Business Academy, theFIRMA, #Factory, Circular economy 2.0, Labriikki, Game/Health Tech/Sales Lab (Turku UAS)
- Research seminar (UG)
- Course Seminar (UG)
- Workshops (UG)
- Other, what?

3. Evaluate the following statements **in the context of learning environment you selected in the previous list** (Q1) with the scale from 1 to 6. There are no right or wrong answers.

1 completely disagree, 2 somewhat disagree, 3 neither agree nor disagree, 4 somewhat agree, 5 completely agree, 6 I cannot evaluate because this is not present in this learning environment.

To enable student's learning in the chosen learning environment, working **as an educator is** according to my experience...

	1	2	3	4	5	6
challenging.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
stressing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
confusing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
rewarding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
inspiring.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
meaningful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
motivational.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
uncertain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
insufficient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
enhancing my competence as an educator.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Design elements of the learning environment

4. Evaluate the importance of following design elements **in the context of learning environment you selected in the previous list** (Q1) with the scale from 1 to 6. There are no right or wrong answers.

1 completely disagree, 2 somewhat disagree, 3 neither agree nor disagree, 4 somewhat agree, 5 completely agree, 6 I cannot evaluate because this is not present in this learning environment.

To enable student's learning in the selected learning environment, according to my experience, **as an educator** it is important...

to mirror a professional workplace at university with specially furnished lab, clinic or office.

to simulate authentic professional work practices with structures and rules (e.g., meetings, teams, organization structure).

to simulate authentic professional work practices with methods (e.g., templates, tools, models, machines, devices, instruments).

to cross the borders of university and working life, e.g. by working at the stakeholders' premises or digital spaces.

7. Please explain with, why are these design elements important to enabling student's learning in the selected learning environment? If necessary, you may use your native language.

8. Evaluate the importance of following design elements **in the context of learning environment you selected in the previous list** (Q1) with the scale from 1 to 6. There are no right or wrong answers.

1 completely disagree, 2 somewhat disagree, 3 neither agree nor disagree, 4 somewhat agree, 5 completely agree, 6 I cannot evaluate because this is not present in this learning environment.

To enable student's learning in the selected learning environment, according to my experience, **as an educator** it is important...

	1	2	3	4	5	6
to form fixed teams of the students with unknown people or students from different disciplines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to engage students in working with different professional roles.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to let the <u>students</u> lead.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to give room for turbulence of team dynamic during the work process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to trust each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to learn together.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to have external stakeholders (<u>e.g.</u> clients) participating in some role.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to give support only when needed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to act as a senior colleague or expert for students but to avoid intervene in the work process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to act as a reflection facilitator.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
that the student becomes a director of his/her learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to use peer or team-based methods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to show good practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Please explain with, why are these design elements important to enabling student's learning in the selected learning environment? If necessary, you may use your native language.

--

to push students working with time pressure.

to follow a work-like schedule (office hours and shifts) instead of collective (school) breaks.

to be flexible according to

11. Please explain with, why are these design elements important to enabling student's learning in the selected learning environment? If necessary, you may use your native language.

12. What kind of challenges you have faced related to these four element categories from the perspective of an educator? What kind of possibilities they offer? Please also argument your thoughts. If necessary, you may use your native language.

13. Can you list some main tips for educators who are starting working in learning environment like your case? If necessary, you may use your native language.

14. I am: *

- Educator
- Student in the role of educator, e.g. as an assistant, tutor or team leader

15. How long have you worked as a educator? *

- Under 1-2 years
- 3-5 years
- 6-10 years
- Over 10 years

ⁱ Bouw, E., Zitter, I., & de Bruijn, E. (2020). Designable elements of integrative learning environments at the boundary of school and work: a multiple case study. *Learning Environment Research*. <https://doi.org/10.1007/s10984-020-09338-7>



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