



**TeC – TOWARDS E-COACHING,
THE FIRST STEP TO BUILD TRUST WITH A DIGITAL COACH**

Research Project under the Erasmus + Programme carried out by research teams from
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Handbook

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1 Introduction

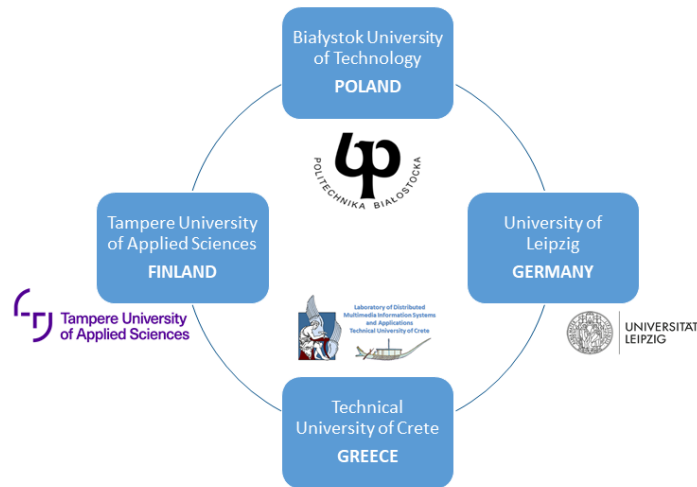
This handbook begins with a project overview, in which the main objectives for the project "Towards e-coaching: The first step to build trust with a digital coach" are given. This is followed by an overview of how teaching and learning in the partner institutions of the project is conducted.

1.1 Project overview

The digital transformation is changing the culture of teaching and learning and requires a readjustment of the various teaching and learning formats. The relationship between classroom and self-study with electronic resources also needs to be reformed. In this way, new formats can enrich the range of studies in terms of form and content without weakening the formation of personality through regular encounters in the face-to-face university.

In 2021, the Faculty of Computer Science of the Bialystok University of Technology (project leader) proposed three European universities to participate in the consortium and jointly prepare a response to the challenge faced by higher education institutions in the era of the CoViD-19 pandemic, i.e. a way to effectively engage students with remote learning. The activities of the consortium are carried out under the name "Towards e-coaching: The first step to build trust with a digital coach". The National Agency of the Erasmus+ Program supported the project under Action 2, Strategic Partnerships for Digital Education in the Higher Education Sector with a grant of EUR 254,729.00. The coordinator of the "Towards e-coaching" project was Prof. dr. hab. Dorota Mozyrska, Dean of the Faculty of Computer Science of the Bialystok University of Technology. The project team included employees of the faculty and PhD Eng. Capt. Piotr Wołęższa from the Maritime University of Technology in Szczecin.

The theoretical part of the project, concerning the development of the e-coaching methodology, was carried out by specialists in the field of didactics and methodology from the Tampere University of Applied Sciences (TAMK) in Finland and Leipzig University in Germany. The project developed training and e-learning courses, available on the Coursevo platform (<https://ecoach.coursevo.com>) prepared by the Technical University of Crete in Greece. Using the training materials, the project members of the Faculty of Computer Science of the University of Technology in Bialystok conducted pilot classes with students of technical faculties in the following subjects: entrepreneurship, programming, mathematical analysis and linear algebra. In this way, 12 videos of direct remote meeting sessions with first-year students were created.



1

Figure 1: The project consortium (own illustration)

The project "Towards e-coaching: The first step to build trust with a digital coach", Erasmus+ Program Strategic Partnerships for Digital Education in the Higher Education Sector aims at:

- Developing innovative didactic methodologies for distance learning (e-coach), which will create the basis for building trust between the parties of the educational process;
- Creating an integrated e-learning platform on the use of e-coaching methodology, including an activation programme for teachers, and
- Piloting examples of e-coaching courses, i.e. 12 registered classes in Mathematical Analysis, Algebra, Programming and Entrepreneurship using an innovative e-coaching methodology dedicated to higher education institutions.

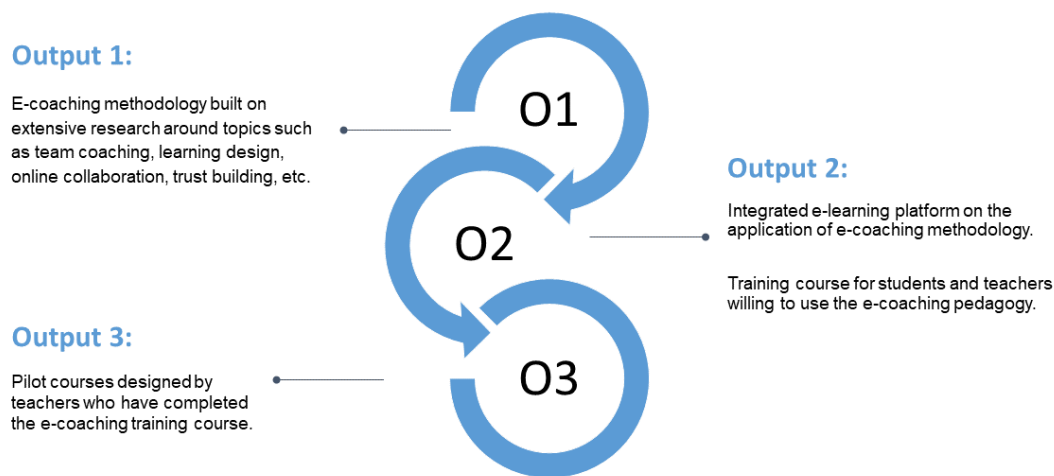


Figure 2: Project outputs (own illustration)

1.2 Teaching and learning in higher education in the project partners' institutions

Similar to the member states of the European Union in general, there are also a variety of differences in teaching and learning. The spectrum is wide and ranges from traditionalist teaching methods such as lectures to more contemporary teaching methods such as interactive seminars and group works. The so-called shift from teaching to learning, which puts the learner in the centre of educational activities, however is visible in most countries. The CoViD-19 pandemic has accelerated the growth of digital teaching methods, since during the pandemic in the years 2020-2022, teaching and learning most often was conducted in digital or virtual environments. In times of rapidly changing societal and technological developments, learning processes are not limited to a physical classroom anymore, but learners and teachers are increasingly separated by time and space. This new reality presents challenges and complexities, since more information need to be processed even faster and new tasks be completed. Innovative concepts, such as e-coaching can help learners and teachers to reduce complexity to manageable levels. In order to explore the full potential of e-coaching, however, we need to understand the intra-personal and interpersonal processes between learners and teachers.

Bialystok University of Technology

The general impression is that the ex-cathedra system still dominates in the education system. Teachers usually deliver knowledge and they are the persons who know “everything” including what is needed for students. The predetermined goal for the student is to listen and knowledge acquisition. The level of acquisition is verified through the tests during the semester and exams at the end of the semester. Sounds familiar? Did you graduate from such a school or university? How much of this knowledge have you used in your life? What if students used most of the lesson time to discuss topics that interest them, for which they take responsibility, and the teacher would ask questions, encourage discussion and explore the topic, which could become a diploma thesis and finally a professional work. Sounds idealistic? We are of the opinion that involving students in the education process is crucial. One of the successful methods is coaching. The method requires involvement of both parties, which is even more challenging in an online environment (e-coaching).

Tampere University of Applied Sciences

Tampere University of Applied Sciences (TAMK) is a multidisciplinary and international higher education institution whose expertise ranges from engineering to business and entrepreneurship with a focus on pedagogics and vocational teacher training. As a university of applied sciences, TAMK has a special emphasis on practically oriented education and research activities. TAMK has over 13,000 students, of which approx. 10,000 are degree students. The students can engage over 40 degree programmes, of which nine are conducted in English. TAMK has approx. 700 staff members. TAMK is an international higher education institute with 360 partner universities in 50 countries. TAMK's profile both as a modern and dynamic educational institution as well as an active project actor allows for genuine, long-lasting and confidential partnerships with companies and SMEs, as well as with public and third sector organisations. TAMK has strong experience in running and participating in projects funded by varying funding instruments (Erasmus, EuropeAid, TEKES, ESR, ERDF, Erasmus+, First, Northsouth-South, Interreg, etc.). TAMK has three impact areas that are targeted to developing 1) learning capabilities in modern work environments and international networks, 2) adaptation of emerging technologies, and 3) ecological innovations and social challenges. These will work as a framework for integrating both education and research from varying fields of studies. The nine fields of study of TAMK named School of Pedagogical Innovations, School of Business, School of Built Environments and Bioeconomy, School of Media, Music, and Art, School of Industrial Engineering, School of Health, and School of Wellbeing and Health Technology ensure that education and research activities are multidisciplinary and large projects can be carried out by utilising a vast variety of expertise. Development projects are often implemented in so-called living labs. A living lab is a real-life test and experimentation environment where users and producers work collaboratively to produce innovative solutions. TAMK's strong expertise in the field of education is being applied in the development of products and services which include an educational component. TAMK has been a valuable member of several Erasmus+ Strategic Partnership, Knowledge Alliance, and Capacity Building projects.

We are well prepared for and are using many tools to support digitised learning environments. With the project "Towards e-coaching: The first step to build trust with a digital coach", our aim has been to develop the current stage with new approaches, as well as to increase and support students' need for multi-channel learning opportunities by piloting and collecting the experiences in the development of e-coaching in response of the CoViD-19 situation. TAMK has a widely-recognised profile as an educational institution offering high-quality, up-to-date professional skills and competencies for students in Bachelor and Master's Degree Programs. Furthermore, TAMK offers education for professionals already in working life to allow them to expand and update their skills and competences. The TAMK impact areas most relevant for the "Towards e-coaching" project are adaptation of emerging technologies and learning capabilities in modern work environments and international networks. Developing modern digital technologies and tools in collaboration with companies and research organisations plays a key role in TAMK's educational portfolio. TAMK strives to provide its experience of digital and online pedagogics so that e-coaching can be integrated as a central component for digital education programmes and platforms. This approach can be used to facilitate skills of the higher education institution students, but also life-long learning central for the universities of applied sciences (Nevalainen et al., 2022).

Technical University of Crete

The Technical University of Crete (TUC) was founded in 1977 in Chania and admitted its first students in 1984. TUC provides undergraduate and postgraduate studies in modern engineering fields, to conduct research on cutting edge technologies as well as to develop links with the industry. TUC is a

public university, under the article 16, paragraph 5 of the Constitution of the Hellenic Republic. TUC is currently comprised of five schools, which grant engineering degrees upon completion of a five-year course. All the five schools run modern postgraduate programmes: 1) School of Production Engineering and Management, 2) School of Mineral Resources Engineering, 3) School of Electronic and Computer Engineering, 4) School of Chemical and Environmental Engineering, and 5) School of Architecture Engineering. Currently, over 5,500 undergraduate and 1,500 postgraduate students are studying at TUC. There are 120 permanent faculty members, supported by more than 100 adjunct faculty members and laboratory staff members. The university also employs approximately 100 administrative staff members.

All undergraduate programmes award the Diploma of Engineering. The undergraduate programmes of TUC have a total duration of ten semesters (five years). The first nine semesters are allocated for coursework and the final semester for diploma thesis work. A total of 300 credits are required for the undergraduate degrees (i.e. 60 credits are attached to the workload of a full-time academic year). Most of the courses offered are compulsory, but there is also a wide variety of elective courses. In addition, most courses include lectures, tutorials, laboratory assignments and practical training, seminars and other activities, including educational visits to industries and field trips. To become eligible for graduation a student must complete nine semesters of course work and prepare a diploma thesis under the supervision of one or more faculty members during the tenth semester. TUC is particularly active in conducting basic and applied research. The research and development projects, managed by the Research Committee, are funded by the European Union, the General Secretariat for Research and Technology, the Ministry of Education, the Region of Crete, local administration organisations and many private businesses. A large number of TUC undergraduate and postgraduate students are employed in these projects. In this way, they benefit from the best possible training and they familiarise with conducting research.

Most universities in Greece follow the traditional teaching model, supported by e-learning platforms and digital tools. But these have mostly been used as online repositories of training materials (lecture materials, labs and exercises descriptions, etc.) and a means of basic asynchronous communication (e.g. announcements, mailing lists, and messages). During the CoViD-19 lockdowns, the use of these tools was increased, and they became the only means for teaching and supporting the educational process. On one hand, this unlocked the potential of these tools, but, on the other hand, it revealed or amplified problems that might also have existed long before CoViD-19 (e.g. badly designed (online) courses, difficulty to build trust, passive role of students, no active participation of students, no collaboration among students and between students and teachers, no motivation, no assessment, cheating in exams, etc.). There is a demanding need for changes in didactics and pedagogy.

Leipzig University

Founded in 1409, the University of Leipzig is one of the oldest universities in Europe. Important impulses for the development of science have always come from Leipzig as a cosmopolitan, modern comprehensive university, it strives for a leading position among German universities. Some 14 faculties with more than 130 institutes and centres as well as 19 central facilities focus on interdisciplinary and interfaculty as well as international cooperation in research and teaching, and on cooperation with other research institutions as well as the economy and the urban society. At Leipzig University, about 500 professors and about 2,550 research assistants/academic assistants conduct research and teach. The university employs a total of about 5,560 people. Currently, more than 31,000 students are enrolled, and around 7,000 young people begin their studies at Leipzig University each year. In order to attract students, Leipzig University relies on the principle of research-led teaching and

continues to develop its success-oriented, internationally networked range of courses along the Bologna study architecture (Leipzig University, 2022a).

SEPT Competence Center at Leipzig University

Since 1992 the Small Enterprise Promotion and Training Program (SEPT) at Leipzig University has been conducting training and research in the field of entrepreneurship. SEPT is convinced of the need of innovative entrepreneurs and intrapreneurs. The training programmes combine theoretical knowledge and practical experience regarding the management and promotion of small and medium-sized enterprises (SMEs). SEPT not only has a two-year MBA programme where students are trained on economic issues and learn how to support small businesses and promote innovative, dynamic organisations, but also other initiatives developed for the benefit of SMEs. Regarding the learning approach SEPT offers a “constructivist” course-work, allowing students to create new knowledge, not alone but with the guidance and support of experts. The learning approach is related to what is known as social constructivism. Social constructivism emphasises how other people with expertise (e.g. teachers, coaches, mentors, and specialists) can help the learner to construct new knowledge.

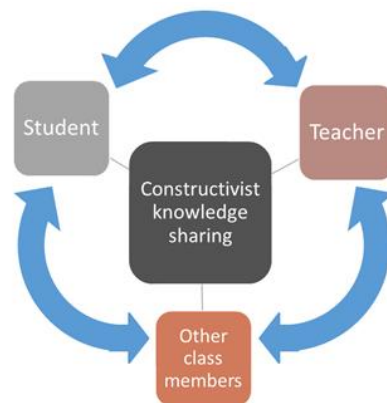


Figure 3: Constructivist knowledge sharing (own illustration, based on Steffe & Gale, 1995)

SEPT offers its students the possibility to work on projects with real companies and entrepreneurs. In some modules students receive a business case or need to perform a defined task like a market research or an innovation project for a specific firm. These are great practical experiences that allow the students to learn by doing. Hence, SEPT fosters strong collaboration with enterprises. There are companies or entrepreneurs that need support in some activities and their necessity represents a great learning opportunity for students. Therefore, the real cases approach is also a fundamental part of the training programmes. In addition, SEPT has a network that expands continuously as a result of different activities worldwide. This network is a great tool that is used for the benefit of the students. SEPT works closely with entrepreneurs, firms, professors and experts in different fields; not only in Germany, but also in different parts of the world. Therefore, SEPT is always trying to organise learning experiences between entrepreneurs, firm representatives, professors, experts and the students.

One of the main components of the programme is that students are not alone in the development of their projects, but that they work closely with a qualified coach. This expert guides the student, answers their questions, discusses, supports and helps during the whole process of completing the assignment. There are plenty of definitions of educational coaching, thus it seems to be broad agreement that coaching in education is about helping the learner to achieve certain goals or improve his or her performance through structured one-to-one conversations, named coaching sessions. In each session the coach enables the self-directed learning of the student through listening, questioning, and challenging, always in a supportive and encouraging environment. The SEPT staff has not only

experience as teachers, most of them have experience as a coach and support students in this way. Hence, the professors and teachers have a double role during the learning process. First of all, they teach through seminars, workshops, and discussions. Then students receive a practical task to apply the new knowledge they built from the previous learning experiences. During the development of the task they receive the support and guidance of their coach (Leipzig University, 2022b).

2 Teaching and learning in higher education

Teaching and learning in higher education encompasses the process of imparting knowledge and skills to students at universities, colleges and other higher education institutions. In this context, teaching involves facilitating learning through various methods such as the traditional lectures and to an increasing extent discussions, group work, and practical exercises. The goal of teaching and learning in higher education is to provide students with the tools they need to succeed academically and professionally, and to encourage them to engage in lifelong learning. Educators and teachers play a vital role in creating and delivering course content, assessing student performance, and providing feedback to support student growth. They are also responsible for creating a learning environment that fosters critical thinking, creativity, and intellectual curiosity. Teaching and learning in higher education is a challenging and rewarding endeavour for educators that requires a commitment to ongoing professional development and a passion for helping students reach their full potential. This chapter first introduces theoretical perspectives on teaching and learning in higher education. What follows is a discussion of the context of teaching in higher education, which is constantly evolving influenced by societal changes and increasingly by technological advancements. These changes affect the roles of the teacher and the relationship between teachers and learners.

2.1 Theoretical perspectives

This chapter provides an overview of relevant theoretical considerations, which are both relevant in coaching as well as in teaching and learning. Learning can be understood as extending and clarifying the meaning of one's experience. At the centre of learning is the concept of change, since change in attitude or behaviour suggests that learning has taken place. The basic principles of relevant (adult) learning theories are presented here and include andragogy, experiential learning, transformative learning, constructivist learning, and motivation. The theories provide the basis for the coaching practice in higher education that is discussed in detail in Chapter 4.

2.1.1 Andragogy

Bachkirova et al. (2018) discuss the assumptions and principles of andragogy. Based on the work of Lindeman in the 1920s and other theories from a wide range of disciplines, Knowles (1978) devised a set of assumptions or principles about the inherent characteristics of adult learners. In this sense, andragogy is concerned with recognising and using these characteristics to guide and support learning. The six main principles, which have been assimilated into the learning culture in the 1970s are outlined briefly, as follows:

1. **Adult learners need to know:** Adult learners have a need to know what they are learning. They have a self-concept as independent learners. Therefore, the agenda needs to belong to the learners rather than the teachers or negotiated so that ownership is with the learners.
2. **Adult learners are self-directed:** Although there might be differences in capabilities and preferences between adult learners, they are self-directed human beings. They want to be treated as equals and shown respect for what they know and how they prefer to learn. Therefore, adults learning should be facilitated rather than directed.

3. **Adult learners have a wealth of prior experience:** Adult learners build their learning on a continuously growing reservoir of experience. Experience therefore has a strong impact on their learning. However, experience can also be an obstacle in the learning process due to existing mental models and schemas. Therefore, adult both learning and unlearning need to be encouraged for new learning to occur.
4. **Adult learners learn when they have a need to learn:** Adult learners tend to learn when they have a need to learn, for example when their life situation requires to do so. Therefore, teachers should consider the life situation of the learners to provide more effective learning experiences.
5. **Adult learners are relevancy-oriented:** Adult learners often want to apply new knowledge immediately or use it to solve problems. They learn best when there is an issue they need to address urgently. In this context, teachers need to consider that learners on the one hand have to work on immediate problems and have needs to develop long-term.
6. **Adult learners are internally motivated:** Adult learning is more driven by internal rather than external needs, since they want to solve immediate problems relevant to them or strive for internal payoffs. Therefore, teachers should help learners to identify deeper needs and values that can result in desired change.

2.1.2 Constructivist learning

A central idea of social constructivism is that, influenced by the social relationships we keep, each person makes sense of their experiences, constructing and refining a unique understanding of self and the world. Learning, then, involves acting on the world and interpreting the consequences of our actions within a personally constructed sense-making framework. Therefore, learning means the continuous process of making sense of one's experience. Learning is both individual and social when common experiences are involved. Individual learners interpret what they read, write, see, hear, and feel using their pre-existing personal knowledge and experiences. Each learner will take away a somewhat different understanding of a common discussion or lecture, shaped their personal interpretive framework, prior knowledge, and motivation. At the same time, learners who are given the opportunity will mutually influence the sense each makes of their common experiences. Discussion, conversation, group projects, presentations of work in progress, reading and responding to one another's writings all provide opportunities for socially shaping, modifying, and broadening the perspectives of individual learners.

Social constructivism has received some criticisms when taken to an unproductive extreme. In these views of constructivism, knowledge is seen as never being transferred intact, leading to minimal instruction and guidance. Free exploration is argued to likely generate heavy workloads and detrimentally affect learning, while also indicating that there is significant evidence of the benefits for guided instruction from cognitive psychology (Cain et al., 2018; McCann, 2017).

2.1.3 Experiential learning

The theory of experiential learning originates in the philosophy of John Dewey (1910) and has been operationalised later by David Kolb (1984). It is a constructivist theory that suggests that ideas are formed and re-formed through experiences rather than being fixed elements of thought. As a learning approach, experiential learning involves actively engaging with the world through direct experiences, reflection, and application of new knowledge and skills. Rather than simply learning through lectures or reading, experiential learning emphasises hands-on, immersive experiences that allow learners to explore concepts in a more concrete, personal way. This approach to learning can take many forms, such as field trips, hands-on projects, simulations, role-playing, and internships. Experiential learning

typically involves a cyclical process of experiencing, reflecting, conceptualising, and experimenting, where learners engage in an activity, reflect on what they learned from that activity, draw connections to other concepts, and then apply that learning to new situations. Therefore, experiential learning is concerned with technique and process rather than content and outcome (Bachkirova et al., 2018). Experiential learning is often used in educational settings to help learners develop critical thinking, problem-solving, communication, and collaboration skills. It can also be used in workplace settings to enhance employee training and development, as well as to foster a culture of innovation and continuous learning.

2.1.4 Transformative learning

Jack Mezirow's theory of transformative learning (1990) advocates for an education that involves a fundamental revision to our beliefs, principles and feelings and which could therefore lead to a transformation of one's taken-for granted frames of reference (e.g. meaning perspectives, habits of minds, mind-sets) to make them more inclusive, open and reflective. Frames of reference are difficult to change. However, they need to be challenged if deep learning is to occur. At the core of transformative learning is the process of critical thinking in which learners thoroughly enquire about the assumptions on which their perceptions of reality rest. According to Brookfield (1988), the critical thinking process may involve four stages:

1. **Assumption analysis:** Adult learners are challenged about their values and cultural practices in order to analyse their impact on everyday life.
2. **Contextual awareness:** Adult learners realise and recognise that their individual and collective beliefs are created in a particular historical and cultural context.
3. **Imaginative speculation:** Adult learners search for alternative ways of thinking about social phenomena in order to challenge their dominant ways of thinking and acting.
4. **Reflective scepticism:** Adult learners challenge the claims and generalisations of the grand narratives that lead to uncritical interaction patterns.

The transformative process of critical thinking can result in deep learning and revised action since the validity of the conceptual toolboxes that learners use to interpret the world and their understandings of themselves and others are altered (Bachkirova et al., 2018; Koulaouzides, 2017).

2.1.5 Importance of motivation

All of the above theories have in common that their successful application to educational or coaching processes can only come to fruition when the learners' motivation and motivational strategies are considered. A common way to approach motivation would be to divide it into the two categories internal and external. Internal motivation requires the experience of meaningfulness and intentionality. When motivation is found from within, and it drives you towards meaningful, self-important goals, it is a question of self-realisation. Internal motivation makes you focus and orientate towards the goal and makes it easier to manage your own desires and emotional impulses. External motivation is based on feedback and rewards from the environment, such as grades, money or praise. Internal motivation, on the other hand, means that the activity itself is perceived as rewarding and derives inner pleasure from it. The interplay between the extrinsic forces acting on persons and the intrinsic motives and needs inherent in human nature is the territory of self-determination theory.

Self-determination theory

The term self-determination was first introduced by Deci and Ryan in their 1985 book *Self-Determination and Intrinsic Motivation in Human Behavior*. It posits that there are two main types of

motivation—intrinsic and extrinsic—and that both are powerful forces in shaping who we are and how we behave. Self-determination theory suggests that both intrinsic and extrinsic motivation drive us to fulfil three basic psychological needs:

1. **Autonomy:** Adult learners need to feel that they are the masters of their own destiny, being in control of their own behaviour.
2. **Competence:** Adult learners have a need to build their competence and develop mastery over tasks that are important to them.
3. **Relatedness:** Adult learners need to have a sense of belonging and connectedness with others.

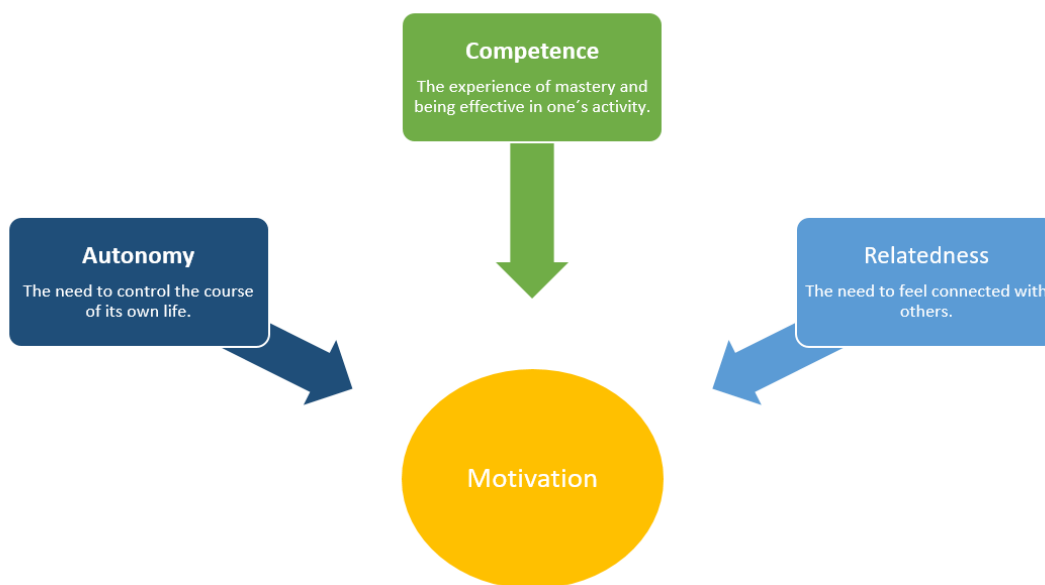


Figure 4: Basic psychological needs (own illustration, based on Deci & Ryan, 1985; Ryan & Deci, 2000)

Different goals, desires, and ideas inform us what we want and need and determine the types of motivation that drive us to fulfil our needs. Therefore, it is useful to think of motivation on a continuum ranging from “non-self-determined” to “self-determined”, as illustrated in Figure 5

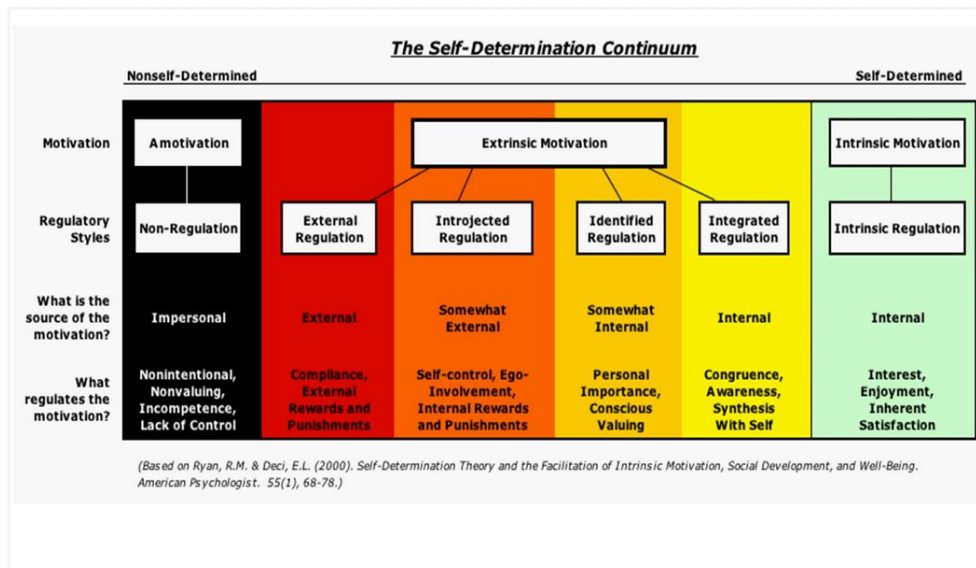


Figure 5: Self-determination continuum (based on Ackerman, 2018; Deci & Ryan, 1985; Ryan & Deci, 2000)

At the left end of the continuum is amotivation, where a person is completely non-autonomous, has no drive to speak of, and struggles to get their needs met. In the middle, there are various levels of extrinsic motivation. One level to the right of amotivation is extrinsic regulation, where motivation is entirely external and regulated by compliance, conformity, and external rewards and punishments. The next level of extrinsic motivation is called introjected regulation, in which motivation is to some extent external and regulated by self-control, ego-protection efforts, and internal rewards and punishments. Identified regulation means that motivation is more internal and based on conscious valuing and personal importance to the individual. The final level of extrinsic motivation is integrated regulation, where intrinsic sources and the desire to be self-aware guide the individual's behaviour. The right end of the continuum shows an individual who is fully motivated by intrinsic sources. In intrinsic regulation, the person is self-motivated and self-determined and is driven by interest, pleasure, and the satisfaction inherent in the behaviour or activity he or she is engaged in. Although self-determination is generally the goal of the individual, we cannot help but be motivated by external sources - and this is not necessarily a bad thing.

Theory X and Theory Y

Theory X and Theory Y are two contrasting management styles proposed by Douglas McGregor (1960). He suggests that managers tend to have one of two basic assumptions about their employees, which he labelled as Theory X and Theory Y. Theory X assumes that employees are inherently lazy and do not like to work. Therefore, they must be closely supervised, and punishments or rewards are necessary to motivate them. Managers who follow this theory tend to be authoritarian and control-oriented. On the other hand, Theory Y assumes that employees are self-motivated and enjoy working. Therefore, managers can give employees more autonomy and allow them to take on greater responsibility. Managers who follow this theory tend to be more participative and empowering. Theory X and Theory Y can also be applied in the context of higher education (Cain et al., 2018; Markwell, 2004).

In a Theory X approach, professors may view students as lazy and unmotivated, and assume that they need to be closely monitored and controlled. Professors may rely heavily on grading and testing as a way to motivate students and enforce discipline. In a Theory Y approach, professors may view students as motivated and eager to learn, and assume that they can take on greater responsibility and autonomy

in their learning. Professors may give students more freedom to choose their own topics of study, provide opportunities for collaboration and discussion, and encourage self-reflection and self-assessment. Another example is the difference in teaching styles between a traditional lecture-based course and an experiential learning course. A lecture-based course typically follows a Theory X approach, with a focus on transmitting knowledge from the professor to the student. In contrast, an experiential learning course may follow a Theory Y approach, with a focus on active learning and engagement, and the belief that students can learn best by doing.

Overall, applying Theory X and Theory Y to higher education can help professors adopt teaching strategies that are most effective for their students and promote a positive learning environment. By recognising the inherent motivation and potential of students, professors can empower them to take ownership of their learning and reach their full potential.

2.2 The changing landscape of teaching and learning in higher education

Higher education has witnessed considerable changes over the past two to three decades with increasingly diverse student populations in terms of educational biographies, life backgrounds and living situations in many countries (McCann, 2017). This change has particularly been influenced by political initiatives with the aim of increasing employability of university graduates and labour mobility (Wohlfart & Adam, 2019) but also by the advance of new learning technologies, most recently accelerated by the CoViD-19 pandemic. This means that distance learning has become a much more significant approach in higher education.

2.2.1 The shift from teaching to learning

There are two conceptions of teaching in higher education: teacher-centred and student-centred education (Harden & Crosby, 2000). The teacher-centred approach is largely based on an objectivist or positivist epistemology, according to which there is a duality between people as knowing subjects and knowledge. Thus, knowledge exists independently of people, but can be learned, tested, and applied by them more or less independently of context (Brown et al., 1997). The task of the “expert teachers” in higher education is therefore to present and impart this knowledge to the “novice students”, usually in the format of the lecture (see Perspective I in Figure 6). One problem with this traditional teaching approach is the presentation of the material. It often comes directly from textbooks and lecture notes, which gives students little incentive to participate in class. The fact that the traditional presentation is almost always in the form of a monologue delivered to a passive audience exacerbates the problem. Only exceptional lecturers are able to hold students' attention for an entire lecture period. It is even more difficult to give students sufficient opportunity to think critically through the arguments presented. Consequently, lectures only reinforce the student's sense that the most important step in mastering the material is memorising a series of seemingly unrelated examples.

Building on constructivist epistemologies, according to which people acquire knowledge and expand their understanding of it through an active construction and reconstruction of the world (Biggs, 1996, 1999), it is not the teachers who are increasingly important, but the students and their learning success and the associated learning processes. This student-centred approach focuses on changes in students' learning and how these changes occur with students. In this sense, what the student does is more important in determining what is learned than what the teacher does (Harden & Crosby, 2000). According to Biggs (2003), the challenge for teachers is to provide quality learning experiences for all students and particularly involves providing a room or environment for students to work on content (see Perspective II in Figure 6). In this regard, one of the main shifts is the increased emphasis on self-directed learning. Students are expected to take more responsibility for their own learning, which can

be enhanced by learning formats, such as integrated learning, problem-based learning (e.g. cases studies) and community-based learning (e.g. service learning).

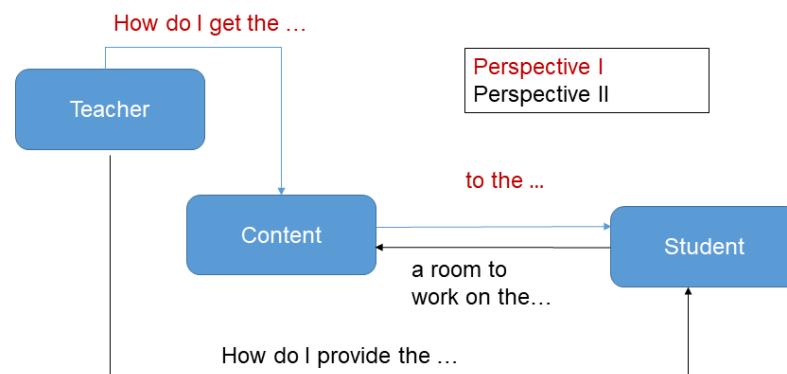


Figure 6: Shift from teaching to learning (own illustration)

The increased emphasis on student autonomy has moved the focus away from the teacher and closer to the student. Nowadays, it has become more common to talk about learning and learners rather than teaching and teachers. However, this should not mean that teaching and teachers are becoming devalued, since teaching and learning are closely related. Teaching is important since its purpose is to enhance learning.

2.2.2 The roles of the teacher

In this changing landscape, more complex demands are being placed on higher education teachers and their roles are diversified and enhanced. Harden and Crosby (2000) developed a framework of the roles of teachers in higher education. Although this framework has mainly been developed for medical education, it gives orientation for other academic disciplines and fields as well. The model identifies six roles for a teacher: information provider, role model, facilitator, assessor, planner and resource provider. Each of the six roles can be subdivided into two roles, which results in a total of twelve roles (see Figure 7). Roles in to the right in the figure are more content-oriented while those to the left are more education-oriented. Roles to the top are related to direct contact with students, while those to the bottom are associated with less student contact.

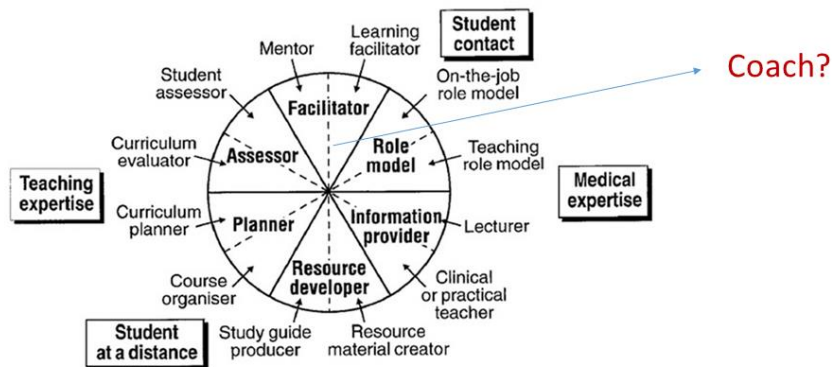


Figure 7: The 12 roles of a teacher (adapted from Harden & Crosby, 2000)

1. **Lecturer:** The lecturer may be seen as the traditional role as a provider of information in a lecturer context. Students regard the lecturer as an expert who is knowledgeable in their field and who conveys this knowledge to students. Despite the availability of other sources of information, such as multimedia interactive learning resources, the lecture remains one of the most widely used instructional methods. The lecturer provides new information not available in standard texts, relates the information to the curriculum and gives a personal overview of the structure of the field of knowledge for the student. There has been a debate about whether the share of lectures in the curriculum should be reduced. According to the recent findings in learning psychology and neuropsychology the teacher's task is not to transmit this knowledge because it cannot simply be transmitted into the student's head. Therefore, the lecturer has the task, to help students acquire knowledge, skills or attitudes that are new to them - through the design of appropriate teaching and learning arrangements (with objectives, methods, tasks for students). Therefore, lectures can still be motivating and exciting, if lecturers are good communicators and enthusiastic about sharing their knowledge with and provide learning experiences to students.
2. **Practical teacher:** In many study programmes, students engage with their teachers in tutorials, for example in a laboratory, workshop, case study, simulation game or in another applied setting. In these more informal settings, the teacher's role is to share with the students their thoughts, facilitate in making experiences and help to illuminate processes of decision-making as a reflective practitioner.
3. **On-the-job-role model:** Role modelling has a great impact on students, perhaps more impact than other teaching methods such as lectures, seminars and tutorials. Through the examples they give in their own person as practitioners or specialists in their field, teachers can manage to transmit values, attitudes and patterns of thoughts and behaviour to students and influence them in their future career choices, professional attitudes and the importance they place on certain subjects.
4. **Role model as a teacher:** Teachers are also role models when they fulfil their role in the lecture theatre or seminar group. Although there is not a great deal of evidence of what an important role model means for the students, some research shows that expressing enthusiasm for the field and teaching, actively involving students, communicating effectively with students, establishing good

relationships with students, and viewing students as a whole are more important teacher characteristics than title and research ability.

5. **Learning facilitator:** The shift from teaching to learning has also required a fundamentally changed role of the teacher. The teacher is increasingly seen as a facilitator or manager of the students' learning rather than a mere provider of information. The more responsibility and freedom the students have, the greater the shift required in the teacher's role. This changing role of the teacher is particularly reflected in the constructivist approach to teaching, in which knowledge is constructed in the mind of the student and is constantly evolving. The increasing availability of (online) learning resources brings with it the need for the teacher as a learning facilitator, in particular concerning integrating the materials in the curriculum and facilitate their use by students.
6. **Mentor:** Students expect their teachers to be a source of help. In this context, teachers as mentors help students (mentees) in making significant transitions in knowledge, work or thinking. Therefore, the mentor's role is not about reviewing the student's performance in a certain subject or in an examination but helping the learner grasp the wider significance of the issues relating to them within a trusted and supportive environment. Morton-Cooper and Palmer (2000) suggests that mentoring in higher education can be described by three models. First, the apprenticeship model views the mentor as skilled craftsperson, from whom the student learns by observation. Second, the competence-based model regards the mentor as trainer or coach who demonstrates and assists the student to achieve a set of competences. Third, the reflective practitioner model describes the mentor as critical friend and co-enquirer. The mentor promotes collaboration and partnership in the learning process.
7. **Student assessor:** The assessor role of the teacher is often perceived as different from other roles, such as information provider, role model and facilitator. While the latter are concerned with assisting the student in various ways to achieve study goals, the role of assessor means passing judgment on the student. This is particularly relevant in summative assessment and to a lesser extent in formative assessment, where the boundaries between assessment and teaching are becoming more blurred. The assessment of student performance has important implications for the students' lives and careers. Therefore, teachers are responsible for ensuring that assessment of students is valid, open, fair, and in congruence with learning outcomes.
8. **Curriculum assessor:** In addition to assessing the students' performance teachers also have a responsibility to assess the courses and curriculum delivered. Typical quality assessment tools include student feedback and peer evaluation. Evaluation is an important accountability mechanism to funding agencies and students. It is also an integral part of the professional role of teachers, since they are responsible for monitoring their own performance and assessing their own competence as teachers.
9. **Curriculum planner:** Teachers are also expected to contribute to curriculum planning. Through their active involvement in the design of the curriculum and the course they teach (e.g. choice of texts, ideas which become focus of study, planning of experiences for students, means by which achievement is assessed), they can have a great impact on their students.
10. **Course planner:** Once the curriculum has been agreed, detailed planning is then needed at the level of the individual course of the curriculum. As mentioned above, there has been a shift from discipline or subject-based teaching to interdisciplinary or integrated teaching as well as problem-based learning and other student-centred approaches. Teachers as course planners need to make sure that these contemporary approaches are reflected in course design.
11. **Resource material creator:** Along with these contemporary approaches to teaching and learning, there is an increased need for learning resource materials. Students are dependent on having appropriate learning resources available for individual and group use. In this context, teachers also

need to keep track of technological advancements since these will increasingly determine the way students learn now and in the future.

12. **Study guide producer:** While learning is facilitated by face-to-face contact with students, the amount of time available for this is restricted. Moreover, it can only to a limited extent provide the necessary guidance for students. In this context, teachers should produce study guides (in print or electronic form), which assist the students with their learning holistically. Study guides direct the students to what and how they should learn and include for example expected learning outcomes, the learning opportunities available and self-assessment of their learning.

The roles of the modern teacher are therefore manifold. It can be suggested that the role of the teacher changes into a coaching role, which is a special focus of this handbook. However, in order to be an effective coach in higher education, the other roles need to be performed equally well.

2.2.3 Constructive alignment

Constructive Alignment pursues the goal of improving the quality of teaching and learning by combining learning objectives, learning opportunities and assessment (Biggs & Tang, 2007). The approach combines two aspects. Based on constructivist epistemologies, “Constructive” is based on the assumption that students acquire knowledge themselves by dealing with relevant learning opportunities. “Alignment” is a central element of instructional design and refers to the teacher's role in creating learning opportunities that promote the achievement of intended learning objectives for students. It is essential to adapt the teaching methods and the assessment to the learning opportunities in such a way that they are conducive to the achievement of the learning objectives. In such a perfectly tuned system, learners are in a prisoner situation, as they are unlikely to fail to learn what the teacher intended (Biggs, 2003). Biggs and Tang (2007) propose a three-stage process for planning a curriculum or a course: (1) definition of the intended learning objectives, (2) the choice of learning opportunities or learning environments that are likely to contribute to the attainment of the intended learning outcomes, and (3) determining the assessment to monitor whether and to what extent students have attained the intended learning objectives. Figure 8 visualises this three-stage process in the form of a triangle.

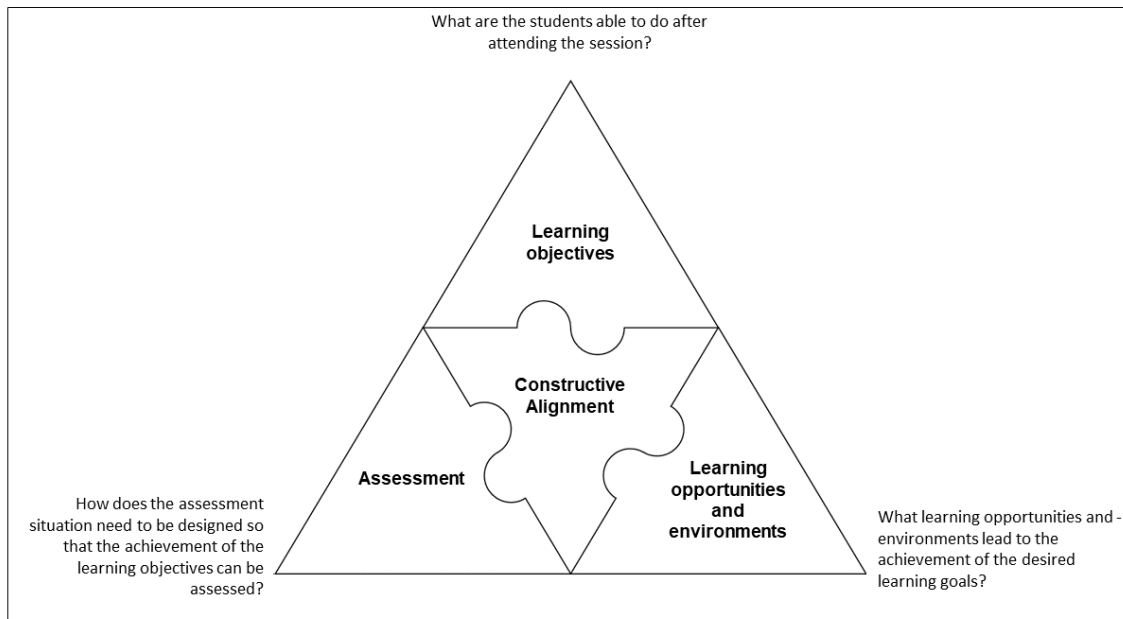


Figure 8: Planning a curriculum or a course according to constructive alignment (own illustration, based on Biggs, 2003; Biggs & Tang, 2007)

Definition of the intended learning objectives

In a first step, the intended learning objectives are formulated in such a way that they describe the desired competencies of the students (competence objectives). The competence level of the learners must be taken into account. Furthermore, learning objectives should contain a content and an action component. To determine the content component, it is important for the teachers to assess what knowledge the students should have acquired after completing the course (Biggs, 2003). Learning taxonomies formulated in verb form are usually used to determine the action component. The content and action components of the learning objectives are in a specific relationship. In order to master higher cognitive processes in relation to the taxonomy levels, deeper knowledge is required or acquired.

Choice of learning opportunities or learning environments

In a second step, it is important to offer those learning opportunities or to create those learning environments that promote the achievement of the intended learning objectives in the best possible way. A traditional learning environment is the lecture. This environment is particularly suitable when learning objectives are formulated in such a way that the students should internalise or understand factual knowledge. In addition, the lecture is very teacher-centred and there is a risk that the students will only demonstrate superficial learning through passive listening and selective recall (Marton & Säljö, 1976). However, there are a variety of alternative learning opportunities and environments that focus on the students in the sense of a change of perspective from teaching to learning and also promote the achievement of higher cognitive learning goals. Project work, service learning, (small) group work, (group) presentations, debates, role plays, case study work and business games can be listed as examples (Wohlfart & Adam, 2019). The latter learning situation is the focus of this article. The digital transformation also offers opportunities to (partially) outsource learning opportunities from the seminar room, e.g. into innovative learning environments such as just-in-time teaching (Novak et al., 1999) or the flipped classroom (Bergmann & Sams, 2012, see 5.4.1).

Assessment

Careful planning of assessment is of central importance in constructive alignment. This is particularly due to the fact that the students focus their learning on the assessment right from the start - they learn what they are tested in and not necessarily what is formulated in the curriculum or dealt with in the course. For the planning of the curriculum or a course, this means that the students only learn the curriculum if assessment is geared towards the formulated learning objectives (Biggs, 2003; Brown et al., 1997). Assessment can be done in two ways - summative and formative. Summative assessment often takes place at the end of the teaching section and is intended to check (based on a grade evaluation) whether and to what extent the students have fulfilled certain standards that correspond to the learning objectives formulated for their level of development (Cain et al., 2018). The classic and still widespread form of summative assessment is the written exam. Although it can be structured differently, for example as a multiple-choice exam or as an open task exam, there is still a risk that the students will only demonstrate superficial learning by learning by heart or working through prepared sample exams and sample solutions, often a short time before the exam date. In terms of constructive alignment, Biggs (1999) describes the portfolio review as an optimal type of assessment because it is most likely to ensure that students actively engage in achieving the planned learning objectives (Cain et al., 2018). This is a formative form of examination that often consists of several elements during the semester and can therefore be optimally geared to checking the achievement of various learning objectives. Formative assessment aims at the continuous mirroring of feedback regarding the learning progress of the students, which is based on the supervision, observation and assessment of oral and written (intermediate) performance. Formative feedback gives students support to reflect on their learning and adapt it to the final goal of passing the summative assessment. Ideally, formative and summative assessments are aligned (Cain et al., 2018).

Overall, the constructivist approach views knowledge as being constructed in the mind of the learner. By implication, this challenges the view that knowledge can be transferred intact from the mind of the educator to the mind of the learner. As a result, the role of the educator changes from someone who 'teaches' to someone who facilitates learning or even becomes a coach in education.

3 Coaching

Nowadays, it is widely acknowledged that coaching can contribute effectively to improving performance and achieving results but also to solving more long-term developmental needs. In the course of greater and more rapid societal changes, people are faced with increasing complexity and uncertainty. Experienced coaches can provide valuable assistance and encouragement to people navigating through these stormy waters. Coaching is relevant in many different areas of life. Business organisations, for example, contract coaches to support executives and staff in different stages of their career and individuals seek professional assistance in various stages of their lives or to improve their health or wellbeing. It can be a powerful tool for mastering the challenges around all of us. This chapter of the handbook first introduces the concept of coaching. What follows is an overview of theoretical perspectives as well as a selection of types of coaching which are relevant for understanding the application of coaching to higher education contexts.

3.1 Definitions of coaching

There are several definitions of coaching due to the various theoretical perspectives and approaches from management, education, social sciences, philosophy and psychology that have been associated with the practice. Generally, coaching is regarded as a helping strategy designed with the aim to enable people to reach their full potential (Bachkirova et al., 2018). However, this view on coaching does not appear definitive enough to distinguish with other forms of helping behaviour closely related to

coaching, such as mentoring and counselling. While there can be some overlap between coaching and counselling as well as between coaching and mentoring, they each have distinct characteristics that set them apart from each other. Both coaching and counselling can be regarded as the same facilitative activity, which necessitates the same theoretical base, the same skills and a high level of personal development. Although from a theoretical perspective, no meaningful distinction can be made between coaching and counselling, there are different understandings in practice.

Counselling is a process in which a trained professional provides support and guidance to individuals who are dealing with personal, emotional, or mental health issues. The goal of counselling is to help individuals explore their feelings and behaviours, gain insights into themselves, and develop strategies for managing their challenges. Counselling typically takes place in a one-on-one or group setting, and may involve a variety of techniques such as talk therapy, cognitive-behavioural therapy, or mindfulness exercises. The coaching profession has distinguished itself from psychological interventions and therapeutic counselling which are primarily aimed at remedying or curing dysfunctions, since coaching focuses on working with an individual or groups to help them achieve specific goals or improve their performance in a particular area. Joseph (2015) suggests that different people will be attracted to either counselling or coaching. While counselling may primarily attract those people who look back in life at what has gone wrong or at specific problems, coaching may be more appealing to people who are looking forward to what can go right.

Mentoring is a learning process between two individuals with learning and development at its core purpose: A more experienced individual (the mentor) provides guidance and advice to a less experienced individual (the mentee) in order to help them develop their skills and advance in their career or personal life. Mentors typically share their knowledge, expertise (i.e. domain knowledge and experience), skills, and networks with their mentees, and provide feedback and support as the mentee navigates new challenges and opportunities (EMCC Global, n. d.). Garvey (2018) suggests that mentoring is dependent on the human qualities of trust, commitment and emotional engagement. Successful mentoring partnerships are characterised by respect for each other and that mentor and mentee like each other, and this may also result in friendship. Depending on how much these human characteristics are emphasised, mentoring relationships can be formal or informal, and may last for a period of months or years. Centre stage in mentoring is the “mentee’s dream” (Caruso, 1992), which is fundamentally associated with their desire to progress, to learn and understand and to achieve. Mentees are often in some kind of transition, such as a new job, a promotion, a new stage of life, setting up a business, organisational change, moving from unemployment to employment or facing retirement.

Mentoring and coaching share many of the same characteristics, however there are some different views. One school of thought, primarily in the United States, suggests that coaching takes the form of a non-directive intervention, while mentoring allows for advice giving. Others believe that both coaching and mentoring are based on coaching skills, such as listening, questioning, challenging and supporting and ought to be non-directive. The difference, however, arises in the level of relevant knowledge and willingness to contextualise and share this expertise (EMCC Global, n. d.). Garvey (2018) suggests that the relationship aspect is central to the dynamic in mentoring but not so much emphasised in coaching which has also been highlighted by Hunt and Weintraub (2002, p. 10): “We believe that coaching doesn’t necessarily require the type of emotional bond usually associated with mentoring”.

The key aspects and the strengths of counselling, mentoring and coaching and the relations between them are relevant and very useful for an application in the context of higher education both in face-

to-face and in virtual environments, while a particular emphasis is made on e-coaching environments and processes in this handbook. Grant (2012) defines coaching as a goal-oriented, solution-focused process in which the coach works with the coachee to help identify and construct possible solutions, delineate a range of goals and options, and then facilitate the development and enactment of action plans to achieve those goals. Flaherty (2010) defines coaching with a focus on contributing to achieving the coachee's goals, which include their capacity for long-term excellent performance, ability to self-correct actions without intervention by the coach, and self-generation in terms of their ability to continuously learn and improve their own competence. Therefore, we use coaching as the main underlying concept, since student learning in higher education at its contemporary stage is characterised by performance and the achievement of goals (i.e. in various forms of assessment) as well as more long-term perspectives on competence or skill development and career or life progression.

3.2 Theoretical perspectives

Bachkirova et al. (2018) argue that coaching is not an atheoretical enterprise that relies only on common sense and an eclectic combination of tools. What therefore follows is an introduction to those theories which are particularly relevant to explain how learning and developmental change in a higher education context can take place and how these theories can be applied to coaching: Psychodynamic approach, cognitive behavioural coaching, solution-focused approach to coaching, person-centred approach to coaching, and positive psychology approach to coaching.

3.2.1 Psychodynamic approach

Lee (2018) discusses how psychodynamic thinking can inform coaching. Psychodynamic thinking traces back to the ground-breaking works of Sigmund Freud (1922) and has since then constantly evolved and gained a relevance in coaching. The so-called psychodynamic approach to coaching builds on four main assumptions:

1. **Human behaviour is influenced by unconscious motives:** Human behaviour is to a great extent influenced by unconscious motives. Therefore, psychodynamic coaching aims to make the unconscious conscious, to increase self-awareness, and to elicit the implicit, hidden or blind spots that can limit the coachee. In this way, coachees can learn to approach challenges with more awareness.
2. **Human behaviour is shaped unconsciously by past experiences:** Human behaviour is also unconsciously shaped by past experiences. In this regard, the coach is interested to find out about the coachee's past experiences and how these link or resonate with present situations.
3. **Parts of the mind conflict with each other:** Since different parts of the mind might be in conflict with each other, the coach is curious about finding apparent inconsistencies in the coachee's "walk" and "talk" with the aim of making the coachee more aware of mixed or conflictual feelings.
4. **There is unconscious communication between people:** Communication between people can be unconscious. Therefore, the coach at time brings attention to their bodily sensations or emotions as possible clues about unconscious communication from the coachee.

Lee (2018) suggests that there are various methods and techniques that are characteristic for an application of the psychodynamic approach to coaching. In particular, it is important to create a "holding" environment (Lee, 2018, pp. 5-7), which is a physiological and psychological space, in which coachees feel safe to be open with their thoughts and feelings, to be able to both share their anxieties and frustrations but also aspirations and hopes. The psychodynamic approach also uses personal

stories to elicit the coachee's past experiences and how these link to their present situations. Much of the psychodynamic approach to coaching relates to reflection. That is why at times the value of silence should be used to allow associations and links to emerge. It can be useful to direct coachees towards introspection, in particular, by spending time to help them tune into their bodily sensations and emotions, since these can be directly linked to particular thoughts and impulses to act.

The psychodynamic approach is particularly suitable for application in skills and performance coaching (3.3.1), developmental coaching (3.3.2), and team coaching (3.3.3). The psychodynamic approach is strong in investigating and making sense of unconscious processes and their role in shaping but also limiting the attainment of goals. However, there are also certain limitations to consider. One limitation is that coachees often look for pragmatic solutions to their challenges and that is why they might be more interested in approaches that focus the present and the future rather than thinking about and reflecting on experiences from the past. Another limitation might be that the psychodynamic approach is focusing too much on the coachee's problems and weaknesses rather than their strengths (Lee, 2018).

3.2.2 Cognitive behavioural coaching

Cognitive behavioural coaching is an active-direct approach that combines the use of cognitive, behavioural, imaginal and problem-solving techniques and strategies aimed at enabling clients to achieve their realistic goals (Palmer & Szymanska, 2007). Cognitive behavioural coaching is based on the assumption that the way we think about a situation affects the way how we feel about that situation and suggests that since we can control what we think about things, we can control how we feel. Therefore, cognitive behavioural coaching focuses on identifying, examining and modifying goal-blocking thoughts, feelings and behaviours and the links between them. The coachee is then motivated to implement the changes in their daily life as soon as possible through a variety of planned exposures and experiments.

Cognitive behavioural coaching was derived and developed from two different techniques. First, from cognitive behavioural therapy, which was developed in its current form by Aaron Temkin Beck (1976). This was a concept that was interwoven with what he had previously described as "automatic thoughts," which are the emotionally charged thoughts that pop up in a person's mind when they are asked an emotional question. He discovered that by learning and developing the ability to recognise and report such responses, one can overcome the difficulties associated with automatic thinking. Second, the work of Albert Ellis (1994), in particular rational emotive behaviour therapy, was influential in the development of cognitive behavioural coaching.

According to Williams et al. (2018), cognitive behavioural coaching is aimed at enabling the coachee in achieving their realistic goals. In order to achieve this overall goal, the coach facilitates the coachee in:

1. **Enhancing self-awareness of underlying cognitive and emotional barriers:** The coach asks the coachee a series of questions, which are aimed at eliciting problems or issues that the coachee has difficulties with, challenging current perspectives and considering alternatives.
2. **Developing more effective thinking and behavioural skills:** The coach asks the coachee to decide whether their idea or belief is logical, realistic and overall whether it is helpful. Encouraging new ways of thinking is of great importance. However, since our core beliefs and thinking errors have become established over a long time, persistence and positive thinking are required to prepare for change.
3. **Building self-confidence and self-acceptance:** Self-acceptance is about holding the belief that a person is okay just because they exist. In a coaching situation it is therefore important that a

coachee learns to never globally judge about themselves (e.g. good or bad; weak or strong, etc.) but only rates aspects of self, such as a certain skill or skill deficit. A global judgement cannot capture the whole complexity of a human being.

4. **Becoming their own self-coach:** Through questioning, active participation and discussion, the coach supports the coachee to achieve more awareness, self-esteem, self-acceptance, and mobility to act. In this way, the coach facilitates the ultimate goal for individuals to become their own coach.

There exist several ways to apply cognitive behavioural coaching in coaching settings. A distinction can be made between behavioural and cognitive methods and techniques. The PRACTICE model is a common behavioural coaching method. PRACTICE is a problem-solving and solution-focused model, which has been used in a variety of coaching and other contexts, such as psychotherapy and stress management. PRACTICE uses sequential steps to help orient the client towards understanding the problem, developing realistic goals, selecting and implementing feasible solutions, and monitoring progress. Figure 9 provides an overview of the seven-step sequential model.

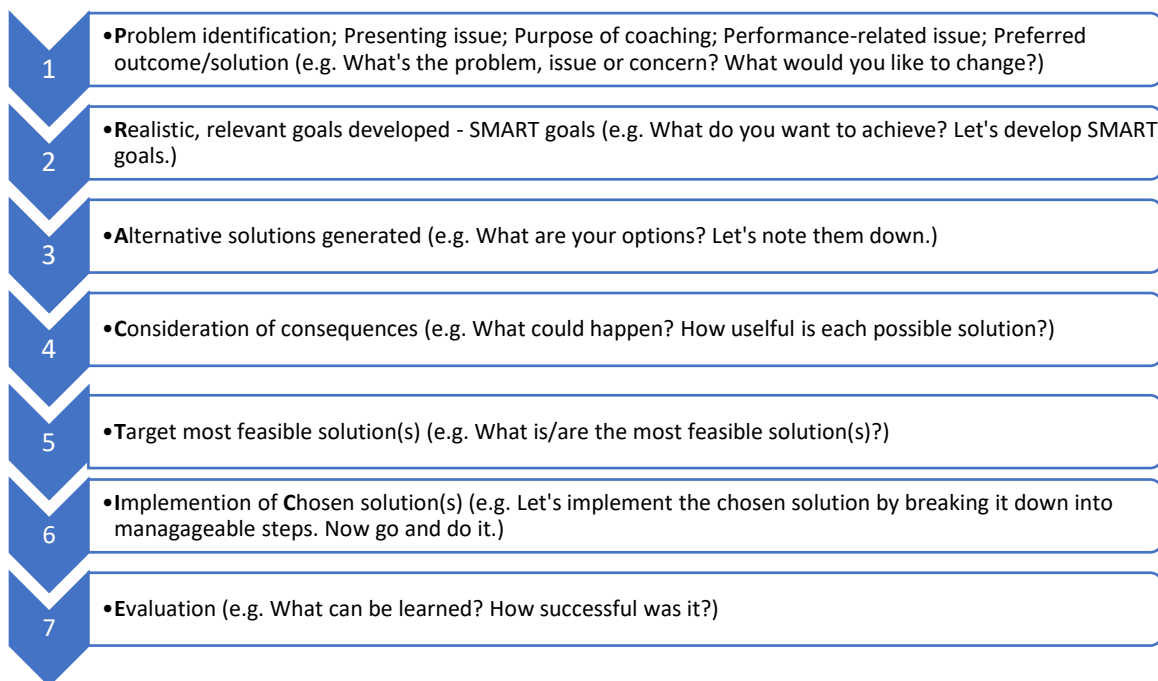


Figure 9: PRACTICE model of coaching (own illustration, based on Williams et al., 2018, p. 22)

An example for a cognitive coaching method is the ABCDE model (Ellis et al., 1997). It allows the coach to facilitate the coach to identify events that trigger psychological disturbances for the coachee, identify unhelpful thinking patterns and generate alternative, more constructive thoughts and behaviours (Williams et al., 2018). Figure 10 outlines the ABCDE model.



Figure 10: ABCDE model (own illustration, based on Ellis et al., 1997)

1. **Activating event or adversity:** The process begins with identifying the event that causes or triggers mental or psychological stress or other negative emotional changes. These are not always significant - people can be severely affected by superficially trivial events or words. It is sometimes difficult to identify the problem, but it is an important first step in eliminating its effects. If it is a particularly traumatic event, a coach may need to proceed gently to encourage the person to talk about their memories of that event.
2. **Beliefs:** These are the systems that have facilitated the individual's response to the earlier stimuli. They are often negative, limiting beliefs, and challenging these limitations is a critical step in recovery. At this stage, one can begin to examine the logic of these belief systems and discover why they developed in the first place. Individuals must be able to discard harmful "self-talk," especially that which conveys a pessimistic attitude about their own abilities, knowledge or skills.
3. **Consequences:** Emotional, psychological – these are the consequences of one's belief systems on their actions. Believing you are going to be bad at a certain task is often self-fulfilling, and the lack of confidence will not allow you to perform under your own pressure. Public speaking is a prime example - if one believes that they are going to perform a terrible speech, then the likelihood is that their oratory skills will suffer even more as a result.
4. **Disputes:** Challenging self-defeating beliefs – this is when one's harmful belief systems truly begins to be approached and subsequently repaired or destroyed. It is suggested that there are three disputes that one may take up with their beliefs:
 - Empirical: What is the basis for these beliefs?
 - Functional: Do the beliefs aid working towards another, possibly unconscious goal?
 - Logical: Does the belief make sense, or is it part of another underlying belief system? If the beliefs do not hold true to any of these disputes, it makes it a lot simpler to remove them from one's mental processes.
5. **Effects:** The impacts of altering or removing the pre-existing harmful belief system – this is when new habits and patterns are formed, and previous mental processes are deconstructed and

reconstructed as to have positive outputs. These often work in positive feedback loops – greater results encourage more self-belief and further impressive outputs follow.

Cognitive behavioural coaching can be a powerful coaching intervention in a variety of coaching contexts, in particular in such contexts where coachees limit themselves by unhelpful thinking or engage in self-defeating behaviours that negatively impact on their performance. Cognitive behavioural coaching may be applied in skills and performance coaching (3.3.1), developmental coaching (3.3.2), and team coaching (3.3.3). (Williams et al., 2018). The International Association of Cognitive-Behavioral Coaching (IACBC) provides more information on cognitive behavioural coaching on the website <https://www.iacbc.org/>.

3.2.3 Solution-focused approach to coaching

The solution-focused approach has its roots in therapy, in particular solution-focused brief therapy which has been developed by Insoo Kim Berg and Steve de Shazer (Berg & de Shazer, 1993). Solution-focused brief therapy was developed because therapists and researchers were dissatisfied with traditional therapeutic approaches, in which the coachee's problems are analysed, diagnoses are made, root causes are uncovered and treatment plans are prescribed. Based on the question "What works for the coachee?" they found that focusing on solution talk, strengths and resources was more effective for the coachee. In this context, the solution-focused approach to coaching does not aim at resolving past problems or effect character change, but seeks to uncover with the coachee their resourcefulness and activate it in achieving the coachee's goals. The coach assists the coachee in defining a desired future state and then in developing new ways of thinking and an action plan that result in the coaching achieving the desired future state. The solution-focused approach to coaching is based on two philosophical assumptions. First, it adheres to a constructivist philosophy, which means that an issue is not given in reality, but it is constructed in the discourse between coach and client. Second, the approach regards the coachee as fundamentally capable of solving problems, since they are full of resources rather than dysfunctional and needy. Based on the two philosophical underpinnings, several key principles are guiding the solution-focused approach to coaching:

1. **A focus on solutions:** The coach primarily focuses on developing solutions rather than identifying and analysing causes of problems.
2. **An assumption that positive change will occur:** The coach is fundamentally guided by the expectation that positive change will occur and that the coachee will engage in change-related activities.
3. **The use of a collaborative working alliance:** The coach treats the coachee as equal and works collaboratively with them on solutions rather than presenting solutions to the coachee that they then are advised to implement.
4. **Changing the viewing to change the doing:** In order to change behaviour, the coach encourages the coachee to change the perspective. The new "lens" or "frame of reference" created by the change of perspective can elicit a different understanding of a situation and open up new ways of thinking and behaving.
5. **Being pragmatic and flexible:** The coaching process focuses on what works for the coachee.

At the heart of the solution-focused approach to coaching is the goal to build a capacity for self-directed learning in the coachee. Self-directed learning seeks to build self-efficacy and self-reliance through encouraging finding own solutions to problems, identifying solutions that work for the individual, assessing effectiveness through feedback and potentially adapting one's actions to reach the goal. In this way, self-directed learning fosters a curious, experiential and experimental mind-set.

Solution-focused coaching has been used successfully in a wide range of settings, since it seeks to work with the coachees' goals and empowers them to draw upon their own resources in developing solutions to problems. The approach is particularly useful in skills and performance coaching (3.3.1) and developmental coaching (3.3.2). However, the solution-focused approach to coaching has been criticised for being too simplistic when problems are complex, or superficial in the sense that underlying problems may not be addressed and for these reasons long-term learning and sustained change may not occur. However, blended with other approaches, it has been shown to enhance the coachees' problem-solving skills, coping skills, resilience, well-being, study skills and learning goals achievement (Grant & Cavanagh, 2018).

3.2.4 Person-centred approach to coaching

The person-centred approach to coaching is a humanistic approach that was developed by psychologist Carl Rogers in the 1940s and 1950s in his work in psychotherapy. He introduced a new form of "non-directed" and later renamed "client-centred therapy", based on the idea that people were the best experts of their own lives and therefore the therapist should follow the lead of the client. In the 1960s and 1970s Rogers' approach began to emerge in other non-therapeutic contexts where human relationships were involved. In the 2000s the "person-centred approach" has been applied to the then emerging area of coaching as well (Joseph, 2018).

The person-centred approach to coaching builds on two major concepts. First, Rogers (1959) believed that people have a natural tendency to strive towards self-actualisation (see also Maslow, 1962). This self-actualising tendency is characterised by a human motivation resulting in personal growth, development and autonomy of the individual. However, this process of optimal functioning is not automatic, it depends on the availability of the right social and environmental conditions. The second principle introduced by Rogers (1957) therefore emphasises a climate of facilitative psychological attitude which includes empathy, authenticity, and unconditional positive regard. In this sense, it is assumed that if people feel understood and accepted in social relationships, their tendency towards self-actualisation will be released.

Based on the concept of the actualising tendency above, the objectives of the person-centred approach to coaching are to facilitate the coachee to make positive changes in their life, develop self-awareness and self-acceptance, and cultivate a greater sense of personal responsibility and autonomy. The coach creates a safe and non-judgmental space for the coachee to explore their thoughts, feelings, and experiences, and supports them in setting goals and creating action plans. Through active listening, reflection, and empathetic understanding, the coach helps the coachee to gain insights and identify their strengths and resources. The coach does not provide advice or solutions but rather helps the client to find their own answers and make their own decisions. This approach encourages coachees to take ownership of their lives and empowers them to live more authentically and meaningfully.

Due to its origins in psychotherapy and counselling, the person-centred approach has mainly been applied to life coaching so far. The person-centred coach helps the coachee to think through a wide range of life situations, such as relationship choices and managing health issues. In coaching areas related to organisational development (e.g. executive and leadership coaching, career coaching), the person-centred approach is used to create a more collaborative and empowering work environment, where employees are encouraged to contribute their ideas and insights. It helps to create a more positive and supportive workplace culture, which can lead to greater job satisfaction and productivity. In educational coaching, the person-centred approach is used to create a more student-centred

learning environment, where the needs and interests of the students are emphasised. It helps students to develop a greater sense of autonomy, responsibility, and engagement in their learning (Joseph, 2018).

3.2.5 Positive psychology approach to coaching

The positive psychology approach to coaching is based on the principles and practices of positive psychology, which is the scientific study of human flourishing and optimal functioning. Positive psychology is a relatively new field of psychology that emerged in the late 1990s and early 2000s. The origins of positive psychology can be traced back to the humanistic psychology movement of the 1960s, which emphasised the importance of subjective experience and personal growth. Both approaches focus on developing talents, building self-efficacy and moving individuals towards self-actualising goals (Boniwell & Kauffman, 2018). However, the specific term "positive psychology" has been advanced by Martin Seligman, a renowned psychologist and former president of the American Psychological Association, in the late 1990s. Seligman (2002) became interested in the idea of studying positive emotions and experiences, rather than just negative ones, and he began to research topics such as happiness, optimism, and resilience. Along with other leading psychologists such as Mihaly Csikszentmihalyi, Christopher Peterson, and Barbara Fredrickson, Seligman helped to establish positive psychology as a legitimate field of study. Positive psychology is now a thriving area of research, with numerous studies exploring topics such as gratitude, mindfulness, and positive relationships, and its principles have been applied in a variety of contexts, including therapy, education, and business. The cognitive-behavioural model (see 3.2.2) is another influence on the positive psychology to coaching.

The main characteristics of the positive psychology approach to coaching include:

1. **Strengths-based:** Positive psychology coaching emphasises identifying and utilising an individual's strengths, rather than focusing on weaknesses or problems.
2. **Positive focus:** The coaching approach focuses on positive experiences, emotions, and thoughts, with an aim to increase positivity and well-being.
3. **Goal-oriented:** The coaching process involves setting specific, measurable, achievable, relevant, and time-bound (SMART) goals, and developing action plans to achieve them.
4. **Evidence-based:** Positive psychology coaching is based on scientific research and evidence, with a focus on applying theories and interventions that have been proven effective.
5. **Client-centred:** The coaching process is centred on the client's needs, goals, and values. The coach provides support, guidance, and tools to help the client achieve their desired outcomes.
6. **Holistic:** Positive psychology coaching takes a holistic approach, considering all aspects of a client's life, including physical, emotional, social, and spiritual well-being.

A positive psychology tool that many coaches use is the GROW model to structure their coaching sessions.

The GROW model

The GROW model was created by Sir John Whitmore and colleagues in the late 1980s and has become one of the most popular coaching models for setting goals, improving performance, and coaching (see Whitmore, 2002). The acronym GROW stands for Goal, Reality, Options, and Will.



Figure 11: GROW model (own illustration, based on Whitmore, 2002)

Working with the coachee, the goal for the coach is to raise awareness and develop ownership at each stage.

- 1. Establish the goal:** This step involves setting a specific and measurable goal that the individual or team wants to achieve. The goal should be challenging but achievable, and should be framed positively (e.g. SMART goal).
- 2. Examine the reality:** This step involves taking a realistic and honest look at the current situation. This includes identifying any obstacles or challenges that may hinder progress towards the goal.
- 3. Explore the options:** This step involves exploring different options and strategies that can be used to overcome obstacles and achieve the goal. This can involve brainstorming different ideas and evaluating their feasibility and potential effectiveness.
- 4. Establish the will:** This step involves creating an action plan and committing to taking specific actions to achieve the goal. The action plan should include specific steps, timelines, and measures of success.

The GROW model is often used in coaching sessions, but can also be applied in other contexts such as project management and personal development. It provides a structured approach to goal-setting and problem-solving that can help individuals and teams achieve their objectives more effectively.

Overall, the positive approach to coaching can be applied in a wide range of situations where individuals want to achieve their goals, enhance their performance (see 3.3.1 and 3.3.3) and improve their well-being.

3.3 Types of coaching

Meanwhile, there is a wide range of different types of coaching or coaching approaches. The respective coaching approach refers to the way a coach delivers their service and reflects the principles, models and tools they use. In general the coaching approach focuses on facilitating learning through active listening and inquiry, and providing appropriate support. The role of the teacher in education has already changed from instructor to facilitator using a coaching approach where teachers begin to help students learn rather than teach them. Coaching aims to support the development of students, teachers, school leaders, and the educational institutions to which they belong. In the following, we present a selection of existing approaches which are also relevant for the context of e-Coaching in

higher education: skills and performance coaching, developmental coaching, team coaching and systemic coaching.

3.3.1 Skills and performance coaching

Skills and performance coaching can be regarded as the original and most common type of coaching, since it is about assisting individuals improve their skills and enhance their performance in a particular area, such as sports, business, or personal development. Generally, the skills and performance coach works with the individual to identify areas of strength and weakness, set goals, and develop a plan to improve their performance. The coach provides guidance, support, and feedback throughout the process to help the individual stay on track and make progress. One distinctive feature of skills and performance coaching is that it involves meeting standards and requirements set by others. Tschannen-Moran (2018) argues that even when the desire to improve skills and performance is motivated intrinsically by the coachee, the standards themselves are typically set by others. In sports, for example, athletes strive to excel within the scope of the rules set. A skills and performance coach in sports may therefore work with an athlete to improve their technique, strength, and endurance. In business, on the other hand, a coach may work with an employee to enhance their communication, leadership, and problem-solving skills.

According to Tschannen-Moran (2018), skills performance coaches must assist coachees in the following ways:

1. **Find positive motivation:** Coaches encourage coachees to find positive, intrinsic motivation to meet the externally defined requirements. This process involves shifting coachees from aversive motivators (e.g. fear of failure) to attractive motivators (e.g. confidence, success) and assists coachees to develop a clear vision for their own performance mastery.
2. **Expand mindful awareness:** The coach assists coachees to attend to things that are happening right now and that really matter, in the moment and without judgment, as this facilitates skills and performance improvements in every area.
3. **Build confidence:** Coaches help coachees build confidence in their abilities by providing encouragement, celebrating successes, and helping the coachee recognise their accomplishments.
4. **Recognise learning opportunities:** Coaches assist coachees in learning to attend to engage in opportunities for learning and growth.
5. **Design learning experiments:** Coaches generate and test out multiple learning experiments for skills and performance improvements instead of directing coachees to a single course of action.
6. **Support perseverant efforts:** Coaches assist coachees to persevere when it comes to implementing new behaviours, in particular in phases of setback.
7. **Savour evidence of progress:** Coaches assist coachees to experience and celebrate mastery in their desired areas of improvement, since this builds self-efficacy and the motivation for long-term success.

In order to handle these seven tasks, coaches need to engage in various critical functions. The LEAD model provides orientation for coaches to build rapport with coachees, understand their needs and perspectives, and co-create effective solutions (Tschannen-Moran & Tschannen-Moran, 2017). LEAD

is a coaching framework that stands for the four conversations Listen, Empathise, Appreciate, and Design:

1. **Listen:** The first step of the LEAD model is to actively listen to the coachee. This involves giving the coachee your full attention and being present in the moment. Coaches use active listening skills such as asking open-ended questions, paraphrasing, and reflecting to demonstrate that they are fully engaged with the coachee.
2. **Empathise:** Once the coach has a good understanding of the coachee's situation, the next step is to empathise with them. This involves putting yourself in the coachee's shoes and seeing the situation from their perspective. By showing empathy, coaches can help coachees feel understood and validated.
3. **Appreciate:** The third step of the LEAD model is to appreciate the coachee's strengths and qualities. Coaches help coachees recognise their unique skills, experiences, and perspectives that can be leveraged to achieve their goals. This helps build the coachee's confidence and motivation to take action.
4. **Design:** The final step of the LEAD model is to co-create a plan of action with the coachee. This involves working collaboratively to identify specific goals and develop strategies for achieving them. The coach supports the coachee in identifying potential obstacles and developing contingency plans to overcome them.

Once coachees experience satisfaction with the improvement of their skills and performance it leads them to continued interest in additional observations and conversations. They become fully engaged in the coaching process of continuous performance improvement. In this process coaches become partners on the journey rather than instructors.

Overall, skills and performance coaching can be a valuable tool for anyone looking to improve their performance, whether it is in their personal or professional life.

3.3.2 Developmental coaching

Development is widely associated with growth of intellectual, emotional or some other capacity over time. Therefore, developmental coaching is a type of coaching that focuses on helping individuals develop their skills, abilities, and potential in a specific area or overall. Inherent in developmental coaching is the assumption that the coachee wants to move from where they are now to where they want to be. The goal is to facilitate the individual's growth and development by identifying their strengths and weaknesses, creating action plans for improvement, and providing ongoing support and feedback (Jackson & Cox, 2018).

Developmental coaching is typically used in professional settings, such as in organisations or businesses, to help employees develop their skills and advance their careers. However, it can also be used in personal settings, such as in relationships or personal development. Therefore, in this wider perspective, developmental coaching is concerned with helping coachees to experience qualitative changes in attitudes, values and understanding as a result of ongoing transactions with their social environment (Taylor et al., 2000). Developmental coaching can therefore be regarded as a progression from skills and performance coaching (see 3.3.1). While skills coaching is about developing the mastery of aspects of a particular activity and performance coaching helps people deploy effectively a particular activity, developmental coaching helps a person change in order to engage in a different way with

current and future challenges. While the former type of coaching is shorter term, and its goals are pre-defined and specific, the latter type of coaching has a long-term perspective and focuses on the achievement of more emergent and evolving goals. Developmental coaching is a constructivist approach, in which the coachee's agenda and goals prevail. The constructivist premise (see 2.1.2) suggests that we all construct our own perspectives of the world based on individual experiences and perceptions. It helps coachees not only to achieve their full potential at work or improving their performance in specific areas, but also enabling them to make conscientious decisions, understand their values and beliefs, take appropriate risks or discover their purpose (Jackson & Cox, 2018). Hence, the developmental coach will focus and reflect on process and limit questions of content.

Overall, developmental coaching can be an effective approach for facilitating an individual's growth and development, but it may not be suitable for everyone and may require a significant investment of time and resources.

3.3.3 Team coaching

Team coaching in the workplace is a relatively recent concept. Team coaching has first been discussed by Hackman and Wageman (2005) as a direct intervention with a team that focuses on enhancing the performance, collaboration, and effectiveness of a team by providing support, guidance, and feedback to its members. Skiffington and Zeus (2000) also describe the team coach as someone who facilitates problem-solving and conflict management. It involves working with the team as a whole, as well as with individual team members, to help them develop the skills and abilities they need to work together more effectively. Thornton (2010) regards coaching a team to achieve a common goal as central to team coaching, whereby emphasis is placed both on individual performance and team performance and collaboration concerning solving a specific problem rather than building the team's overall capacity to sustain performance. From these perspectives about the function and role of team coaching, Clutterback (2018) identifies an acceptance by the team and the team coach that a coaching approach is appropriate and beneficial, a focus on performance, and an emphasis on conversations between team members concerning more effective use of collective skills, knowledge and interests as common factors of team coaching.

Team coaching is often used when a new team or project team is formed, in particular when the project is of strategic importance to an organisation. Team coaching can play a valuable role in assisting in the various stages of development that a team goes through as they work towards achieving their objectives. In particular, it can contribute to speed up the time to reach the performing stage as it is described in the Forming, Norming, Storming, Performing, (and Transforming) model first introduced by psychologist Bruce Tuckman in 1965:

1. **Forming:** In the forming stage, team members are introduced to each other, and they are trying to establish their roles and responsibilities. There is a sense of excitement and optimism about the project, but also a level of uncertainty and anxiety.
2. **Storming:** In the storming stage, conflicts and tensions may arise as team members try to establish their positions and assert themselves. This can be a difficult stage as individuals may have different ideas and approaches, and there may be disagreements and power struggles.
3. **Norming:** In the norming stage, the team begins to establish a shared vision, goals, and values. Team members start to work together more collaboratively, and there is a sense of unity and cohesion within the team.

4. **Performing:** In the performing stage, the team is focused on achieving their objectives and working together to deliver results. There is a high level of trust, communication, and cooperation within the team.
5. **Transforming:** The transforming stage has not been included in the original Forming, Norming, Storming, Performing model, but it is important to consider because some teams may disband, reorganise, or evolve to take on new projects or challenges. The transforming stage recognises that the team's work is not necessarily linear, and they may need to adapt and change to achieve ongoing success.

Team coaching differs from team building and team facilitation. Although all of these processes are used to support teams in achieving their objectives, they differ in their focus and approach.

1. **Team coaching:** As discussed above, team coaching is a process of working with a team to improve their performance and achieve their goals. The focus is on developing the team's skills, communication, and collaboration to improve their overall effectiveness. The coach provides guidance and support to the team to help them overcome challenges and achieve their objectives.
2. **Team building:** Team building on the other hand, is a process of bringing a group of individuals together to work more effectively as a team. The focus is on building trust, improving communication, and promoting teamwork. Activities such as team-building exercises and games are often used to help team members get to know each other better and develop stronger relationships.
3. **Team facilitation:** Team facilitation is a process of guiding a team through a meeting or decision-making process. The facilitator helps the team to stay on track, ensure that everyone has a chance to contribute, and work towards achieving their objectives. The focus is on creating an environment where everyone can contribute and work collaboratively towards a common goal.

In the higher education context, team or group work play an increasingly important role for learning, such as with student team enterprises and project teams. Following the premises of social constructivism, students learn together through working in authentic real-life projects that may also involve a real client whose needs they are solving. In team coaching, the role of the coach is to support and facilitate the team and the students' individual and collective learning processes within the team or group learning environment. The team coach needs to maintain the productive tension between the individuals (with their personal goals) and the collective (team), and help the individuals focus and re-focus their attention to the effect that their actions have on the team and the value they create for it and their client(s). The team coach can take on different roles based on the situation where they are working. In one-on-one coaching conversations, the team coach can take on a more typical coaching role, whereas when working with the whole team during dialogues, the role is more like that of a facilitator. When working with the leaders of the team, the team coach can even take on a more advisor- or mentor-like role, depending on their own expertise.

3.3.4 Systemic coaching

One of the key influences was family therapy and systemic thinking, which emerged in the 1950s and 1960s. In the 1980s, this approach began to be applied to coaching, with the development of a new field known as "systemic coaching". Some of the pioneers in systemic coaching include Peter Szabo, John Whittington, and Alister Scott. Szabo and Whittington, for example, have developed a coaching model known as "systemic coaching constellations" (see Whittington, 2012) which uses visual

representations of the client's system to identify patterns and dynamics. Since its development, systemic coaching has evolved and been refined by many practitioners and organisations around the world. Today, it is a widely recognised approach to coaching that is used in a variety of settings and contexts.

Systemic coaching is an approach to coaching that focuses on the individual within the larger context of their environment and relationships. It recognises that an individual's behaviours and attitudes are influenced by the systems in which they operate, such as their family, workplace, or community. Systemic coaching is based on the principles of systems theory, which views a system as a set of interconnected parts that work together to create a whole. In systemic coaching, the coach works with the coachee to identify the patterns and dynamics within the systems that affect their behaviour and goals. This approach can help coachees to gain a deeper understanding of their own patterns of behaviour and how these patterns are influenced by their relationships and environment. Osterheider (n.d.) suggests that systemic coaching is based on a systemic attitude which involves seven elements. The systematic attitude is visualised in Figure 12 and briefly outlined below.

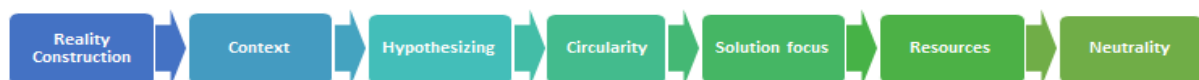


Figure 12: Systemic attitude (own illustration, based on Osterheider, n.d.)

1. **Reality Construction:** Is the central concept of constructivism, based on the assumption that the reality people think they see is always a constructed reality. In other words, there is no objective reality, but reality is constructed or "invented" by the observer of a situation or state, thus it is a subjective reality, and this invention depends on the observer's history (e.g. socialisation, culture) and selection of relevant data.
2. **Context:** Every action is embedded in a meaning-structured situational context, so that every form of action, therefore also non-action, is co-conditioned by a constellation of the current context. This means that the respective context constellation of personal, environmental and task factors results in the respective concrete action situation. The personal concern of the agent depends on the personal significance of the situation, the valence (action valence), and the necessary competencies for coping with the situation (action competence).
3. **Hypothesizing:** The term hypothesis is usually understood to mean a statement that expresses an assumption that has not yet been confirmed, usually for the purpose of explaining a fact. The term hypothetical therefore expresses uncertainty about the truth.
4. **Circularity:** Circularity refers to the behaviour of elements of a system where the behaviour is both cause and effect of other elements of that system. The phenomena mutually influence and condition each other. The doing of one causes the doing of the other.
5. **Solution orientation:** It means recognising and reinforcing the "positive differences". That is, what is already working and fitting better now and what is desired to be so to an even greater degree in the future.
6. **Resources:** Are usable energies that can be used to achieve goals and can be located at the level of behaviour (personal experiences), skills (strengths, strategies), attitudes and beliefs (e.g. faith, hope), and identity (e.g. self-worth). Even if resources seem to be lacking with respect to a

particular goal, they can be identified, anchored, and transferred from other contexts in counselling.

7. **Neutrality:** Neutrality is an attitude that a coach adopts. Specifically, neutrality means that coaches seek to understand the concerns and expectations of all parties and to mediate mutual understanding and thereby when necessary, help the parties articulate and justify their concerns. On the part of the coach, neutrality requires inner flexibility, empathy, and the ability to put aside one's own concerns.

Systemic coaching can be applied in a variety of settings, including personal and professional coaching, leadership development, and organisational consulting. It can help individuals and groups to improve communication, collaboration, and problem-solving skills, and to create more effective and sustainable solutions.

4 Coaching in higher education

There is growing recognition at the international level that large-scale education reform is needed to meet the challenges of the 21st century. Young people must be equipped with the skills and competencies they need to succeed and thrive in this rapidly changing world. The traditional model of educational delivery is being challenged, as are the focus and outcomes of education. While academic achievement is and should remain an important aspect of education, a more holistic approach to education is being called for (see 2.2). Therefore, a coaching approach looks promising for a more holistic perspective in higher education.

Coaching in education focuses on enhancing learning and students' development as it encourages and requires the learner to find solutions for themselves (van Nieuwerburgh, 2012). Every coaching session is a learning opportunity; not only for the student, as the primary learner; but also for the coach. Yet the student can certainly benefit from the expertise of the coach, both are able to learn from each other. Coaching is a holistic, multi-faceted approach to learning and change. Therefore, it has a key role to play in education: in the classroom, in the professional development of key players in the education system, and in creating cultures of learning. The term coaching is increasingly used in the context of teaching at universities, e.g. as learning guidance integrated into teaching. As a result of the change in teaching culture demanded by the Bologna reforms, from instruction to guidance of student learning, the levels of action of professional teaching at universities are expanding: In addition to presenting subject knowledge and arranging the learning environment for appropriate use of that knowledge, professional teaching should motivate the students, stimulate the students' self-reflection and help to avoid and, if possible, overcome learning blocks.

The coach-teacher creates the necessary atmosphere of mutual understanding and trust, openness to new ideas, shows alternative ways, encourages students to make independent decisions, ideas and projects and implements them. Coaching as a learning style can be used in any form of educational process: in seminars, colloquia, research papers and courses. Today it is one of the most important directions, along with the application of new information and communication technologies in education.

4.1 Similarities and differences between coaching and education

At first glance, coaching and education do not seem to have much in common, and everyone can see the differences. However, upon closer examination, one is surprised at how many similarities exist between coaching and education. Onu (2016) identified some common characteristics, processes and roles of coaching and education, which are presented in Table 1:

Table 1: Similarities and differences between coaching and education

Similarities	Differences
<ul style="list-style-type: none"> ● Coaches and teachers identify learning needs and intrinsic values; in both education and coaching it is necessary to connect achievement to one's own desires, otherwise the achievement of objectives is jeopardised. ● They listen in order to understand and offer assistance to coachees and learners. Performance is not easily achievable; therefore, learners need empathy and reinforcement from their educators. ● They aim at discovering abilities, strengths and resources. Problem solving usually requires an awareness of the specifics of certain circumstances and the proper identification of resources. Coaches' support helps coachees to optimize their effectiveness; similarly, learners become high achievers when teachers support not only their physical development, acquisition of knowledge, skills and abilities, but also their psychological development. ● Both, coaches and teachers, formulate visions of individual excellence. A positive view of the future, formulating clear objectives and planning lead to success. ● They choose innovative designs and strategies for action; using brainstorming to discover multiple possibilities for action and targeting the most feasible solution, in agreement with one's personal wishes and values, lead to high achievement. ● They practice and refine new behaviours. Most changes occur - and the best habits are internalized - when we practice what we want to learn repeatedly in different contexts. ● They celebrate achievements. Coaches as well as educators who praise the achievements of their learners and 	<ul style="list-style-type: none"> ● Education begins at birth and continues throughout life, while coaching occurs only when the student is mature enough to be the subject of coaching. ● While education differs from one society to another and from one era to another, coaching is the same everywhere except that, as in all fields, it improves and enriches over time. ● Coaching is optional, while education happens anyway (whether we plan it or not). ● A fundamental difference is in the questions starting with "How...?". While such questions are representative in coaching and open a wide range of options, they are not recommended in education because they are vague, non-specific, and elicit a variety of responses from students (usually not the response expected by the teacher).

<p>coachees boost their self-image and lead to success.</p> <ul style="list-style-type: none"> • They repeat these steps to constantly improve. Acquiring habits and performance is not a linear process that ends at a certain point. Acquiring lifelong learning skills and attitudes with the goal of easily adapting to change is one of the challenges that both coaches and teachers face. 	
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The similarities between coaching and education are remarkable, which allows for a coaching approach to be applied in higher education. As a first step, the coach is recommended to develop principles of coaching and a coaching philosophy that is best suited to support students in their learning and development process.

4.2 Principles of coaching

Coaching in education is a process that involves supporting and empowering students to enhance their learning. However, coaching in education requires also self-reflection on part of the teacher. Sushchenko et al. (2019) discuss the core principles and methods of coaching in education as well as the roles the educator-coach or educator-teacher and the coachee-student have in the educational coaching interaction, which is illustrated in Figure 13.

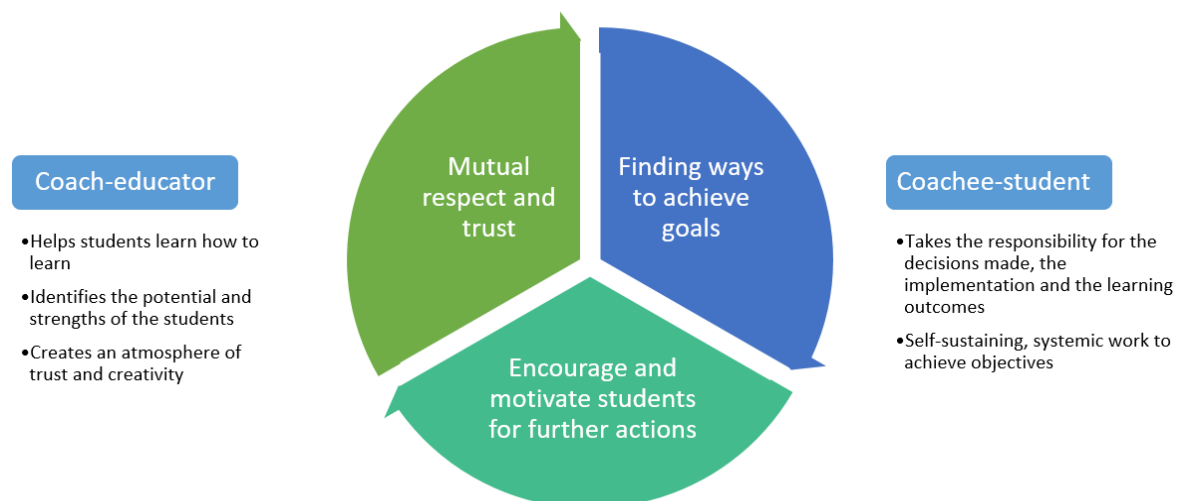


Figure 13: Interaction in educational coaching (own illustration, based on Sushchenko et al., 2019)

Some of the distinctive principles of coaching in education include:

1. **Openness and trust:** Coaching in education is a collaborative process that involves building a partnership between the coach-educator or coach-teacher and the student. This partnership is based on openness and trust, respect, and a shared commitment to student learning.

2. **Reflective practice:** Coaching in education is grounded in reflective practice, which not only encourages students to reflect on their learning, but also involves teachers engaging in self-reflection and self-evaluation to improve their practice.
3. **Goal-setting:** Coaching in education involves setting goals for student learning and continuous improvement. The focus is on future results and on learning success. Educator-coaches or educator-teachers are encouraged to build on the students' strengths helping them to achieve their learning goals.
4. **Feedback:** Coaching in education involves providing specific, timely, and constructive feedback to students. The feedback is designed to help students reflect on their practice and make improvements. This form of feedback is called formative feedback and directs students towards achieving learning objectives.
5. **Differentiated support:** Coaching in education recognises that students have different needs based on the stages they are in their individual learning progress. That is way one size does not fit all. As such, coaching is tailored to the individual needs of each student, with differentiated support provided as needed. This approach is also known as scaffolding.

Based on the principles of coaching, coach educators or coach-teachers build their own coaching philosophy.

4.3 Coaching philosophy

Having a coaching philosophy gives clear guidance on the objectives that should be pursued and how to achieve them. It encompasses a coach's overall approach to coaching, including their coaching style, goals, values, and strategies for teaching and motivating students. The coaching philosophy should reflect the coach's personal beliefs and values, as well as their experience and knowledge of their domain. It should also be adaptable to different situations and students, while remaining true to the coach's core principles. Some common elements of a coaching philosophy may include a focus on individual student development, a commitment to teamwork, a dedication to hard work and determination, and an emphasis on building strong relationships with students. The coaching philosophy should align to the guiding principles as outlined above while also being consistent with their own values and beliefs. A coaching philosophy is used to consistently guide coaching decisions and actions.

According to Miller (2020), a coaching philosophy will reflect the coach's core values as well as moral standards and integrity. Therefore, the first step in developing a coaching philosophy is to define these core values ("Ideals"), which may include creativity, relationships, achievement and many others.

To show up as your best self for your coachees, you should have a deep understanding of why you want to be a coach, i.e. what is your purpose. Some of the following questions may help in discovering that "Why.":

- What is my motivation for coaching?
- What type of coach do I want to be?
- What is it that I would like to achieve with my coachees (students)?
- What will I achieve for myself?

Some questions which can help you to define your coaching style, that mean your "How":

- What personal view of the process of change do you have?
- What objectives does this personal view require for growth?
- How is accountability established for yourself and your coachee (student)?
- What personal standards will you bring to each coachee (student)?

Figure 14 provides an overview of the three elements of a coaching philosophy.

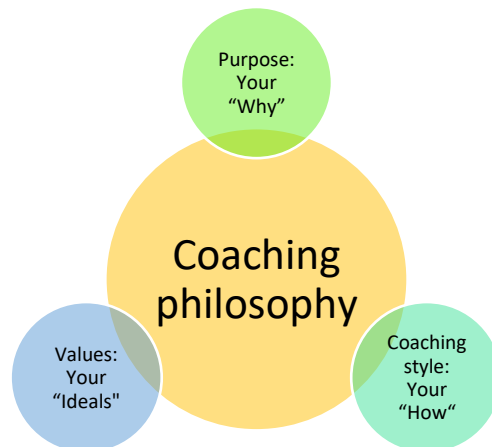


Figure 14: Coaching philosophy (own illustration, based on Miller, 2020)

Miller (2020) gives a step-by-step example of a pathway to develop your own coaching philosophy:

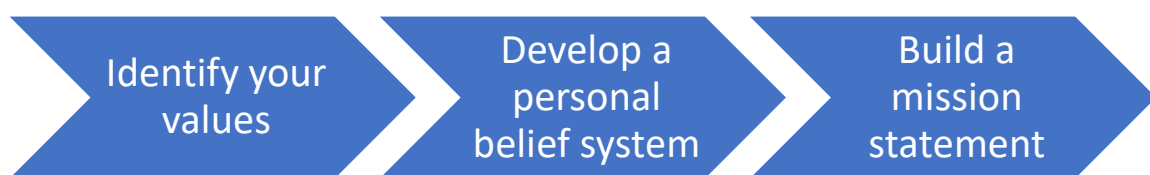


Figure 15: Step-by-step example of a pathway to developing a coaching philosophy (own illustration, based on Miller, 2020)

In a first step, you identify your values. List three core values, which may include mutual respect, organisation, and integrity. In a second step, you develop a personal belief system by developing actions for each step. In terms of mutual respect, this may mean that you always approach the coachee (student) with unconditional positive regard. Organisation, for example, clarifies that you are always

organised with meeting times, administration and keeping track of progress and discussions. Integrity means that you always honour the trust and confidence of your coaches. Finally, in a third step, you build a mission statement from your answers to the second part on the path, which could read “I am always providing open-minded support for coachees (students) as an organised, safe, and honest coach (educator), providing collaborative and creative space to explore personal growth.”

A coaching philosophy has a direct impact on the coach, their coachees and the world around them. Developing such a philosophy allows for a kind of "standard of care." Although each conversation will be creative and unique, having a coaching philosophy allows the coach to perform in the same way for each person they coach. Coaching conversations can change and take a different direction. A coach who knows their coaching philosophy intimately can approach each of these conversations with curiosity and ensure that the coach’s values are respected in the process. A coach who is fully committed to serving their coachees creates space for the coachees to fully realise their potential.

4.4 The four cornerstones of coaching

Based on a review of the literature in educational and coaching research as well as our own experience in higher education teaching and learning and higher education coaching, we developed the four cornerstones of coaching as the basic coaching framework to be used in e-coaching in higher education.

The cornerstones are **Trust**, **Dialogue**, **Ownership**, and **Co-creation** – the higher the emphasis on each of the four elements, the more holistic is the e-coaching process. But it is not mandatory to reach a high level in each of them – depending on the situation, learning goal, environment, etc. The strategies and methods that we are suggesting may help you with strengthening one or more of the four elements.

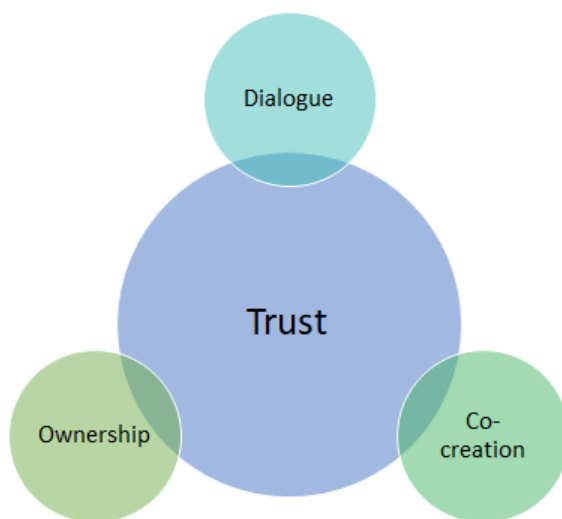


Figure 16: The four cornerstones of coaching (own illustration)

4.4.1 Trust

Trust between the participants is a must for any group that needs to use the intelligence and creativity of each of its members. It is a necessary building block that enables all the other cornerstones of coaching: dialogue, ownership and co-creation. The other cornerstones also strengthen the trust between the members of the group. Especially dialogue has been found to be conducive of “koinonia” or trust-based impersonal friendship (De Maré et al., 1991), which does not depend on compatibility

between personalities (“personal chemistry”) or previous friendly relationships. Trust allows the group to progress from initial politeness, where people do not voice their experiences and concerns in fear of others’ reactions, to tensions that arise when people finally grow frustrated enough with each other to give up their initial politeness, and to a stage where the team starts actually working together in the spirit of generative dialogue (Isaacs, 1997). According to many experts on teams, vulnerability-based trust is especially important for building psychological safety in the most productive teams (Lencioni, 2002). Effects of trust include the ability to talk openly and to make sense of the shared situation on a basic level. It also allows the students to focus on the matter at hand, instead of nervously watching their back at every occasion.

One common problem teachers perceive with student team work or projects is that some of the team members often end up “loafing” or “freeloading”, not doing their part of the work, while some individuals in the team end up doing the majority or even all of the work by themselves. This problem appears to be tied to the fact that in many educational institutions, little or no attention is given to building trust within teams. The “freeloader” role, which is often seen as the most problematic one by the educators signals individuals’ lack of trust in both, their own ability to make a meaningful contribution through their own work as well as the other team members. Feeling anxious and unable to take on meaningful work or trust others in the team, they fall back on a “safe” role of a “freeloader”, telling themselves and sometimes even others that they are “lazy” and just do not feel that the work is important enough to take part in. Being a “socialiser” or an entertainer of a group is a signal that the team member trusts the team but not their own ability to contribute through actual project work. They may be important in keeping up the “team spirit” but ultimately provide little value to actual teamwork. Being a “lone wolf” is perhaps the most dangerous position for the individual: Trusting their own ability but not the others in the team consigns them to taking on majority or all of the work in the team while inadvertently hindering others, through signalling distrust, from participating. This role is dangerous because it is often supported by the individualistic assessment practices in educational institutions and teachers, often having been lone wolves by themselves, sympathise with students who take on this role instead of questioning it and asking how the team member could be made trust others and help them take on more responsibility. Being thus reinforced, the students often carry this role with them to working life, which puts them in grave danger of being burned out when their responsibilities grow to overwhelm them.

The way to help more people in the team towards the “key player” role is to help them build trust in their own skills and building trust within the team. Also, when the students take on the roles of a “freeloader”, “socialiser” and “lone wolf” it should be questioned from the perspective of trust, especially if taking one of these roles appears to be recurring for some students, and the students should be helped in finding ways to build trust in their own skills as well as other team members. An effective method to build trust between the coach (teacher/educator) and individual students as well as students as team members is a learning contract.

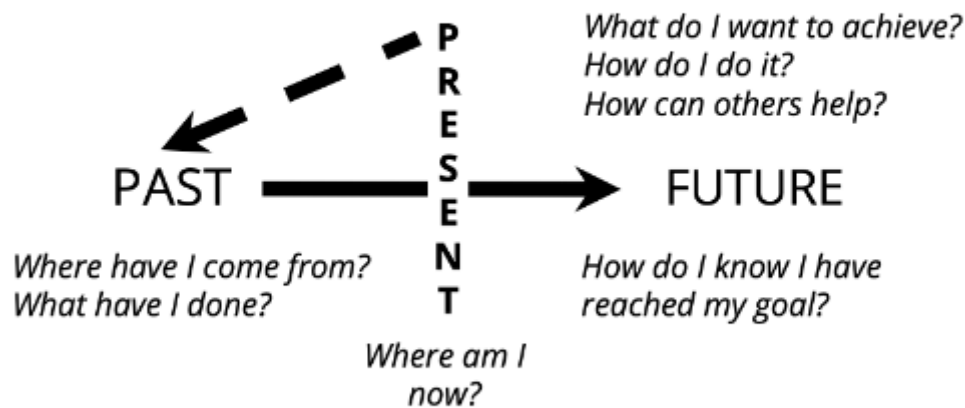
Learning contract

Nevalainen et al. (2022) emphasise the learning contract as an important tool for coaching in education. It is a written or oral contract about the learning process of an individual team. The contract is usually made for a period of six to twelve months at a time but it can and perhaps should include thoughts about longer term goals. A learning contract is a voluntary agreement between the team, the team and the coach, and everyone agrees to work towards the goals in it.

In the beginning of the first year, the focus of the learning contract is on past experiences, as those experiences (both negative and positive) can have a strong effect on how we behave with others and

how we perceive and interpret things and situations in the present. Our past can also set our horizon for the future, which we are trying to expand through learning.

Learning contract



Based on Cunningham (1999). *The Wisdom of Strategic Learning*

Figure 17: Learning contract (based on Cunningham, 1999)

When we deal openly with things in the past, it makes it easier for us to understand our strengths and choices, and we are able to leave behind those things and situations in the past that we do not want to carry with us any further. We can outgrow our past experiences and others can help us in doing that.

However, it is up to everyone to decide for themselves what they want to share with others in the team, and it is the duty of others to respect these decisions and listen to what the person has decided to say.

The principles of dialogue (see 4.4.2) are very important during learning contract sessions and include:

- Sharing and thinking together, not decision making or debating
- Respect for difference - listening, exploring
- No obligation to speak or to be silent
- Being present with others
- Suspending evaluation, assumptions and judgement
- Honesty and transparency
- Building on others' ideas.

Cunningham (1998) discusses the benefits of a learning contract and finds that it can contribute to:

- Better connect theory with practice and reflect on this connection
- Develop a greater sense of ownership of the learning process
- Set measurable development goals for short and longer term
- Enhance self-knowledge and self-confidence

- Increase the motivation to learn, participate and gain a realistic idea of self in relation to work and career
- Understand and reflect on one's own strengths and weaknesses.

Developing a learning contract at this early stage of studies involves a five-step set of questions and sub-questions.



Figure 18: Five steps of developing a learning contract (own illustration)

During the second and third year of the study programme, team members can focus on each question every six to twelve months in their learning contract instead of going over it again and again. This provides room to better reflect on the progress we have made. It is important to save each learning contract for ourselves and honestly evaluate if we fulfilled our goals.

- Have we acted on our values?
- Has our dream changed?
- Did we develop skills and competences necessary to take us forward?

Whether we succeed or fail it is feedback for ourselves, in fact, constructive reflection and honest evaluation of our actions is success in itself. As trust builds between members, it gives room to ask more important questions as well as ask for help from each other to pursue our goals.

Team roles and personality tests

It is important to recognise each other's strengths and weaknesses when creating team roles. It is not a matter of confidence and willingness to step into a role, but mere ability to endure the task. One way to find out about individual team roles is to take a test, for example, Belbin's team role test.

Meredith Belbin's team role theory (1996, cited in Ellis, 2002) is used frequently in organisational behaviour studies. The theory is based on research undertaken on general managers on training courses. As a result "Belbin's team role self-perception inventory", was published focusing on nine team roles. Belbin argued that any effective team requires its members to undertake these roles. Of course, this does not mean that an effective team has to have nine members, as members can take more than one role.

The nine Belbin team roles are: Resource Investigator, Teamworker and Co-ordinator (the People roles); Plant, Monitor Evaluator and Specialist (the Thinking roles), and Shaper, Implementer and Completer Finisher (the Action or Task roles).

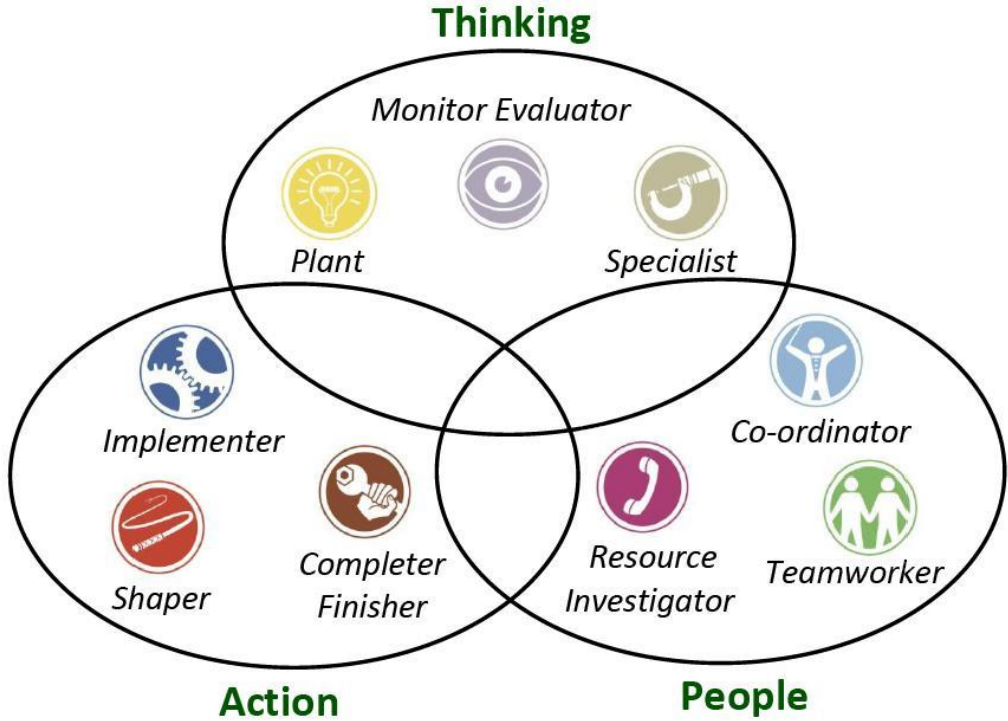


Figure 19: Belbin's team roles (based on Belbin, n.d.)

The strength of contribution in any one of the roles is commonly associated with particular weaknesses. These are called 'allowable weaknesses'. Executives are seldom strong in all nine team roles.

Table 2: Contribution and allowable weaknesses of Belbin's team roles (own illustration, based on Belbin, n.d.)

Roles and description	Contribution	Allowable weaknesses
Plant	<ul style="list-style-type: none"> • Creative • Imaginative • Communicative • Unorthodox • Solves difficult problems 	<ul style="list-style-type: none"> • Ignores details • Too preoccupied to communicate effectively
Resource investigator	<ul style="list-style-type: none"> • Extrovert • Enthusiastic • Communicative • Explores opportunities • Develops contacts 	<ul style="list-style-type: none"> • Over-optimistic • Loses interest once initial enthusiasm has passed
Co-ordinator	<ul style="list-style-type: none"> • Mature • Confident 	<ul style="list-style-type: none"> • Can be seen as manipulative

	<ul style="list-style-type: none"> • A good chairperson • Clarifies goals • Promotes decision making • Delegate well 	<ul style="list-style-type: none"> • Delegates personal work
Shaper	<ul style="list-style-type: none"> • Challenging • Dynamic • Thrives on pressure • Has the drive and courage to overcome obstacles 	<ul style="list-style-type: none"> • Can provoke others • Can hurt people's feelings
Monitor-evaluator	<ul style="list-style-type: none"> • Sober • Strategic and discerning • Sees all options • Judges accurately. 	<ul style="list-style-type: none"> • Lacks drive and ability to inspire others • Overly critical
Teamworker	<ul style="list-style-type: none"> • Co-operative • Mild • Perceptive and diplomatic • Listens, builds, averts friction, calms the waters 	<ul style="list-style-type: none"> • Indecisive in crunch situations • Can be easily influenced
Implementer	<ul style="list-style-type: none"> • Disciplined • Reliable • Conservative • Efficient • Turns ideas into practical actions 	<ul style="list-style-type: none"> • Somewhat inflexible. • Slow to respond to new possibilities
Completer	<ul style="list-style-type: none"> • Painstaking • Conscientious • Anxious • Searches out errors and omissions • Delivers on time 	<ul style="list-style-type: none"> • Inclined to worry unduly • Reluctant to delegate • Can be a nit-picker
Specialist	<ul style="list-style-type: none"> • Single-minded • Self-starting • Dedicated • Provides knowledge and skills in rare supply 	<ul style="list-style-type: none"> • Contributes on only a narrow front. • Dwells on technicalities • Overlooks the 'big picture'

Another possibility is simply to test and follow up. A skilful coach can ask the right questions and help individuals to reflect on their role. How did it go and why is the result what it is? One of the key issues to efficient team role execution is lack of trust, which leads to collective thinking and focusing on minor issues instead of the whole picture. Team roles must start with a credit of trust and room for failure. The mere selection of a leader, for example, is not enough. The team must give a mandate to lead and allow to be led. Roles are not static and can change over time. This can be through different experiences, personal development and reflective thinking. During this process the team identifies behavioural strengths and weaknesses in the group.

Teambuilding methods

The difference between the team and the group is that when we take one member out of the team it would make it significantly more difficult to continue working as a remaining group. Teams are built and not hired. Three key elements for a successful team are trust, safety and joy. However, there are also challenges (Rockwell, 2019).

Team building in an online environment will certainly be different than in real life, as we cannot simply go bowling and engage in conversations over an after work drink. There are other possibilities. For the start it is good to set ground rules for the online co-working etiquette:

- Treat the online meeting like a real meeting. None of us would come to the meeting room with a bowl of cereal or brushing teeth. While working from home it is important to keep routines intact.
- While it cannot be expected that everyone has a professional camera and microphone at home, the minimum is to assure that these work beforehand. Check the setting and permissions on the computer.

At times, camera and online setting can feel strange. Here comes an ice breaker. If it was a meeting at the office, we would probably arrive a few minutes earlier and have a chat over coffee. While in reality this is hard to execute in the online environment to the same extent, it can be done with a twist. Ice breakers can include some of the following questions to be asked or short activities to be done:

- **What did you have for breakfast?** This is an easy, low step way to start. As when we see for the first time, it might be difficult for some to open up about more complex issues.
- **What's your favourite _____?**
- **What would you take on a desert island and why?**
- **Last photo you took:** Share on the screen with others one of the last photos you took and say a few words about what you have done. It can be anything. The idea behind is that everyone gets to tell something for the start and even better. It is about themselves, their interest, activities, etc.
- **Online cafeteria and team lunch:** It could be as little as just staying together while we eat lunch or drink coffee. It could also be extended to a cooking class together. Agree with your team members on what you would like to cook and do it together. These types of activity bring more variety to the online setting and allow us to see each other in different situations.
- **Two truths and lie game:** Tell about yourself two truths and one lie, let others guess which one is a lie.
- **Fishbowl:** Once there is some trust in the team, the fishbowl is a great tool to take things forward. Select four to five people to engage in a dialogue for 15 minutes while others turn off their cameras and mute their microphones. Spectators are not allowed to comment or interrupt. They can take notes and ask questions after the time is up. Take turns for who is in the fishbowl, for example, by creating five teams consisting of four people. Each team will get their time in the fish bowl.

Depending on the frequency of the meetings, ice breakers could be done at the start of the week with a focus on the weekend. When 20 people or more are in the same online meeting, it can be challenging to create dialogue at first. Using breakout rooms creates a sense of safety and gives room for everyone to talk.

4.4.2 Dialogue

Dialogue in coaching means engaging in a co-operative methodical inquiry into experience and thinking. William Isaacs (1999) describes dialogue as “the art of thinking together”. Without dialogue, it is very difficult to gain insight in individual and collective ways of thinking and mental models behind our choices and actions. If a team lacks dialogue, it is stumbling in the dark with regards to individual ways of thinking, goals and preferences, and it may be effectively impossible to build momentum towards any particular direction. De Maré et al. (2019) suggest that dialogue in a group is effected by “Koinonia”, which refers to a kind of impersonal fellowship. It develops through increased trust between the participants, increased coherence over the goals of co-operation, increased trust and experience of friendship between the members of the group, the will to take responsibility and, in general, it increases the team’s ability to use collective intelligence.

According to Isaacs (1999), the basic principles of dialogue include:

- Listening attentively (in online setting: with camera on), without thinking what to say next
- Suspending assumptions and judgements and bringing them to open
- Showing respect to others, their experiences and their contributions to the dialogue
- Giving voice to own experience and even uncertainty, not hiding behind knowledge or expertise

One common method to foster dialogue in a team is the dialogue circle.

Dialogue circle

Dialogue creates an atmosphere of trust and deepens the participants' understanding of almost any topic. Dialog circles are meetings where students sit across from each other in a circle and talk about a specific topic under the guidance of the teacher. The goal of the dialogue circle is for students to share their thoughts, feelings, and ideas and to listen to each other. It is a way to promote inclusion and a sense of belonging for all students, regardless of their cultural background or life experience. A dialogue circle promotes cohesion within a class and can help prevent or reduce conflict among students.

Because students typically like to talk about themselves and be heard, a dialogue circle can be very popular in a class. It is a great way to start the day, as it sets the tone for the rest of the lesson.

The dialogue circle helps students acquire valuable skills, such as:



- listening to others without interrupting
- respecting others' points of view
- showing patience
- putting their thoughts into words
- speaking in front of their peers
- feeling empathy towards others
- building confidence
- being part of a team.

4.4.3 Ownership

Ownership in coaching means that the students are the primary owners of their own individual and collective learning process, their studies, and the work done on the course, and that they are willing

to take responsibility for them. Teachers often inadvertently encourage, through their controlling actions, students to not take initiative or ownership over their learning process and work, so as not to do something that will negatively affect the teacher's assessment. Effects of ownership include increased initiative, will to exercise reason and intellect together, as well as an overall decrease in the students' reliance on the teacher's expertise in everyday work. In team coaching, it is crucial to transfer the ownership of work and learning to the students, while being present and helpful.

In addition to the teambuilding activities mentioned above (see 4.4.1), self-assessment is a useful tool for fostering ownership in the students' individual and collective learning process.

Four-question self-assessment ("Motorola rapid feedback")

The four-question self-assessment has been repeatedly used as a proven method for providing rapid and constructive feedback. The method is sometimes referred to as "Motorola feedback", since the company sought to establish an alternative to previously more bureaucratic and slower assessment process particularly aimed at improving employee performance, increasing productivity and fostering a culture of continuous improvement among employees. It has since been adopted by many other companies as a best practice for providing effective feedback to employees. (Waterman, 1994). The four-question self-assessment is therefore very suitable to be applied in educational coaching, since students are empowered by open questions to apply an analysis of their learning progress as well as their personal development. The four questions are:

1. What did we do well?
2. What do we need to improve?
3. What did we learn?
4. What are we going to take into action?

The coach ensures that the team members know the questions and how to work with them, so the method can be used to self-assess any teamwork.

4.4.4 Co-creation

Co-creation in coaching means that the team engages in a creative process which has, as its goal, creating something of value together, or solving a complex problem through making use of a diverse set of skills and personal strengths within a team. Effects of engaging in successful co-creation include having a wealth of opportunities for dialogic reflection and learning while working together, opportunities for gaining trust from and showing trust towards other team members, opportunities for giving positive and constructive feedback for group members to support their learning and development, as well as an increased collective sense of achievement and ownership over the learning process and the work results ("We did this!"). In a sense, co-creation is required in order to actualise the benefits of trust, dialogue and ownership.

4.5 Statements for students

The following statements can, initially, be used as heuristics by the teacher to think about the student's experience ("How would the students on my course answer?") and, perhaps later, as a blueprint for a measurement tool focused on gaining insight on how the students' experience of the coaching approach develops over time. With each cornerstone, there are three to four statements that affect the cornerstone positively and one that affects it negatively.

Trust

- (+) I feel that I can safely share my thoughts, experiences, feelings, and even insecurities within the group.
- (+) I can talk about the errors or mistakes I have made, or my insecurities without fear of being punished or made fun of.
- (+) The teacher encourages, through example, building trust through also sharing some of their own past mistakes, doubts, or insecurities.
- (+) The teacher shows a high level of confidence in our ability to learn and succeed in our endeavours together.
- (-) I would not feel secure about sharing my weaknesses or vulnerabilities within the group.

Dialogue

- (+) I feel safe to share and talk about my own experiences and thinking. I feel that others listen to me and respect me.
- (+) We have explored together, in the spirit of open dialogue, the different ways we think about the most important matters and issues at hand.
- (+) I am actively taking responsibility for the quality of my interaction with others to support the shared learning process.
- (-) I feel that the teacher is not interested in how we think about the matter at hand.

Ownership

- (+) I feel a sense of ownership about the matter at hand and the learning goals. The course matter is connected with my life goals.
- (+) We have set the learning goals and the quality criteria for the outcomes together.
- (+) We can plan and put in action our own ways of studying in a way that best supports our learning.
- (+) We can set the pace for our work together, keeping the overall learning goals and expected outcomes in mind.
- (-) The teacher maintains unilateral control over the work we must do.

Co-Creation

- (+) We work together to create solutions to complex problems.
- (+) There is room for exercising creativity and innovating together.
- (+) Nobody is left alone against their wishes to struggle with difficult problems or work that needs to be done.
- (+) Everyone's intelligence and effort are appreciated and put in use.
- (-) The course and succeeding in it are mainly based on individual effort.

Overall, the four cornerstones of coaching present a solid foundation to be applied in supporting students in their learning and development process. In the next chapter, we will show that this framework not only is suitable for face-to-face teaching and learning but also for virtual environments.

5 E-Coaching framework in higher education

The concept of traditional education has changed radically in recent years. Being physically present in a classroom is no longer the only way to learn - at least not with the advent of the Internet and new technologies. Today, you have access to a quality education whenever and wherever you want, as long as you can get online. In their different roles (see 2.2.2) teachers have an important role in designing online learning. Theories and concepts have been developed specifically for formulating effective scaffolding (Wood et al., 1976) to actively engage students in the online learning process (Ludwig-Hardman & Dunlop, 2003). However, sometimes these theories and concepts seem not to be applied in online classes. Many teachers are still confused or hesitant to use scaffolding in the online learning process. In fact, there are many cases where teachers directly specify only the material to be read and the tasks to be completed. There is no discussion or teamwork at all. Therefore, the learning process is not effective and meaningful for students. Nowadays, the trend of virtual classes is still a good choice because of the conditions and various advantages. Therefore, teachers are required to improve the quality of online learning. One of the ways is to pay more attention to the online learning framework to create an effective and enjoyable learning environment. In this regard, the roles are to support learning, use effective media and technology, and strive to ensure that students are actively engaged in the learning process.

In this chapter, we will first make an attempt to define and understand e-coaching. This is followed by the development of an e-coaching framework in higher education, which is based on the four cornerstones of coaching (see ...) There are two instructional design models and approaches that are particularly useful to guide research and practice in online learning and contribute towards our conceptualisation of e-coaching: Community of inquiry framework (CoI) and Gilly Salmon's five-stage-model. Both models have similarities but also differences and can be used for online course design in isolation or combination. We have decided to use Gilly Salmon's five-stage-model as a basis for the instructional design for e-coaching courses because we found it to harmonise particularly well with the four cornerstones of coaching.

5.1 Towards an understanding of e-coaching

Research about e-coaching is still in its infancy. Therefore, no solid conceptualisations of the concept exist, which leads us to suggest that we define e-coaching as being a similar concept to coaching, with the only difference that it is conducted online. In a higher education context, however, it means that online coaching needs more time and thought to be put on designing the learning environment and ways of learning. To do this planning effectively, it is wise to utilise some instructional design models in connection with the four cornerstones of coaching.

Coaching can be a powerful tool for supporting online learning and instructional design at higher education institutions. Coaching is particularly helpful when it comes to:

1. **Providing personalised support:** Online learning can be isolating, and students may struggle with motivation and staying on track. In this regard, teacher-coaches can provide one-on-one support and guidance, helping students to set goals, create study plans, and stay accountable.

2. **Fostering engagement:** Teacher-coaches can help students to connect with the online learning community and participate in discussions and other activities. This can help students to feel more engaged and motivated, and can improve their learning outcomes.
3. **Developing skills:** Teacher-coaches can work with students to develop specific skills related to online learning, such as time management, study strategies, and digital literacy.
4. **Providing feedback:** Teacher-coaches can provide feedback on student work, helping students to understand their strengths and areas for improvement. This can help students to refine their skills and achieve better learning outcomes.
5. **Encouraging reflection:** Teacher-coaches can help students to reflect on their learning experiences, identifying what has worked well and what could be improved. This can help students to become more self-aware and develop a growth mind-set.

Coaching can be delivered through a variety of modalities, such as email, video conferencing, chat platforms or online learning environments (virtual classrooms). It can be integrated into online courses as a support service or offered as a standalone program. The key is to ensure that coaching is accessible, responsive, and tailored to the needs of individual students.

5.2 Community of inquiry (CoI)

Based on the works of pragmatist philosophers John Dewey (1910) and Charles Sanders Peirce (1955), and social-constructivist perspectives on learning and critical thinking, Garrison et al. (2000) developed the CoI framework to guide research and practice in online learning. According to the authors, “a worthwhile educational experience is embedded within a Community of Inquiry” (Garrison et al., 2000, p. 88). The CoI framework which has been applied in a variety of academic disciplines assumes that learning occurs through the interaction of the three elements cognitive presence, social presence, and teaching presence between learners and teachers.

Community of Inquiry

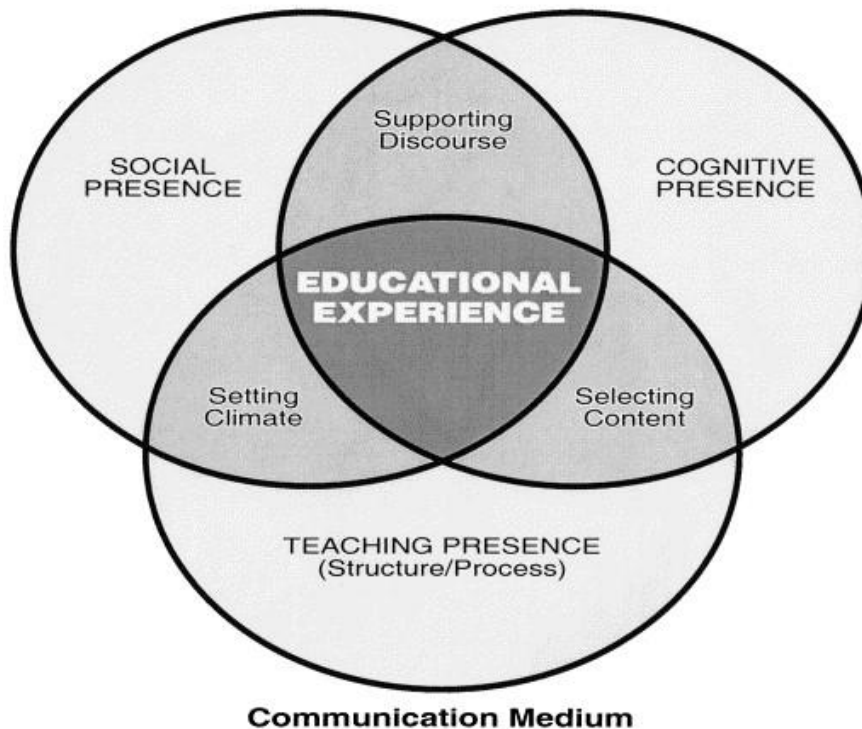


Figure 20: Community of inquiry (Garrison et al., 2000)

Achieving cognitive presence

Cognitive presence refers to the actual learning process and the extent to which learners are able to construct meaning through “sustained communication” (Garrison et al. 2000, 89) and “sustained reflection and discourse” (Garrison et al., 2010, p. 161). Cognitive presence is central to critical thinking, which is one of the main intended outcomes of higher education. Debate-based and case-based learning approaches stimulate thought and facilitate open-ended discussions, which are essential especially for applied study programmes. In order to discuss how learners can achieve higher-order learning in an online setting of these modules, Garrison et al.’s (2000) four-phase practical inquiry process is suitable.

In the first phase, “triggering event” the learner or the teacher identifies a problem to generate a debate, for example in an online seminar. Such questions make learners explore their personal feelings and experiences, as well as information, knowledge and alternatives to make sense of the problem during online seminars as well as in independent study. Teachers can use a variety of technology-based media to guide learners through the second phase, “exploration”, such as researching and studying the academic literature indicated in the module reading lists on a learning platform, such as Moodle (see 6.4.3) Reading lists usually include a wide range of relevant textbooks including numerous case studies. Using educational videos, podcasts or social media as a scaffolding technique allow students to cognitively process current information relevant for the problem. Furthermore, they have potential to connect theory to real world scenarios. In the third phase, “integration”, learners integrate their information and knowledge with that of others in online seminars into a coherent idea or concept. This phase requires the active presence of the teacher to guide learners by checking and correcting their statements concerning the problem. Cloud-based quizzing applications, such as Mentimeter (see 6.6.2), Kahoot! (see 6.6.1) and Socrative (see 6.6.3) can assist teachers in checking learner understanding and in providing formative feedback. Since these applications are cost-free and run on

smartphones, they are particularly suitable for digital native learners of the millennial generation. Synchronous discussion boards, such as Slack (see 6.3.6), can help learners and teachers to integrate their information and knowledge in virtual working groups within and outside of timetabled sessions. In the final phase, “resolution”, learners have the opportunity to demonstrate higher-order thinking by applying the idea or concept. Social media production is a critical skill set in many industries nowadays, for which many learners are not prepared yet. Therefore, social media might be a more effective and motivating technique if learners can create posts themselves. In addition to achieving deep learning, such an outward-facing approach has great potential to build the learners’ networks and foster their employability.

Garrison et al. (2010) suggest that while the first two phases are rather unproblematic to occur in online learning, the final two phases might not always be evident and therefore highlight the importance of the presence of an instructor. However, video-conferencing technologies, such as Zoom, continue to offer new opportunities in this regard.

Achieving social presence

Social presence links to quality of learning, educational levels of learners, satisfaction and engagement. As the “ability of participants to identify with the community, communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities” (Garrison, 2009, p. 352), it develops through social and emotional interactions between learners and teacher. Research suggests that this interaction might not be as easily achieved as in face-to-face settings, due to the usual absence of verbal and visual cues in the traditionally text-based communication in online learning, which might lead to learners’ feelings of isolation or disconnect. Video-conferencing platforms, such as Zoom, enable teachers to create online learning environments, which mimic face-to-face settings, and thus, stimulate social and emotional interaction.

The generally promoted aspects of teamwork and networking in many study modules prerequisite the establishment of social presence. For interaction in the online classroom to be meaningful and effective, a range of open and easy-to-use communication channels is needed for learners to make affective, interactive and cohesive contributions to course activity. Due to their accessibility and functionality, social media as well as online discussion boards have the potential to bring learners and teachers together and foster a sense of community. Online lectures and seminars on video-conferencing platforms allow students to make affective contributions, such as the expression of feelings and emotions, the use of humour and self-disclosure. Like online discussion boards, these platforms also allow learners to create a profile using their real or fictitious name and engage in chat discussions, where they can express emotions and feelings using verbal language and emoji. Furthermore, they provide a non-intimidating learning environment, which has potential to encourage learners to voice their opinion and disclose themselves (Salmon, 2005).

Interactive contributions, such as referring to messages, asking questions, complimenting and expressing agreement signal that one is paying attention to the communication of others. Teachers could promote social presence by making interactive contributions to discussion boards and forums and by providing immediate responses to learners’ emails and questions throughout the course. Separate discussion boards for course-based and for social interactions give learners opportunities to make cohesive contributions, such as demonstrating a sense of identity, belonging or commitment to a group.

Achieving teaching presence

Teaching presence connects cognitive and social presence through “the design, facilitation and direction of cognitive and social processes for the purpose of realizing meaningful and educationally

worthwhile outcomes” (Anderson et al., 2001, p. 5). Therefore, teachers are encouraged to demonstrate continuous presence to develop an effective Col (Garrison et al., 2000). Proper course design is crucial for influencing interaction between learners, facilitating discourse and enhancing critical thinking. A clear overview of course contents and ways of communication from the outset sets clear expectations for learners. In this context, initial face-to-face meetings or online meetings via video-conferencing platforms, video welcoming and overview messages, and encouraging learners to create personal accounts with pictures have great potential to build relationships and establish comfort.

It is recommended to use a page on a learning platform, such as Moodle, for sharing information and interaction between learners and teacher. As a matter of consistency, it is recommended to use this platform as the major communication channel and embed social media to enhance social presence. Teachers can pre-record lectures and upload them on the platform for timetabled sessions and beyond. While this represents a more static environment, video-conferencing tools, such as Zoom, provide options to deliver live lectures, seminars and tutorials. Learners enter a virtual classroom at a given time, interact by asking real-time questions verbally or via the chatroom, and receive an immediate response. Furthermore, break-off sessions with a small number of learners provide opportunities for sustained dialogue and brainstorming. Quizzing applications such as Mentimeter, Kahoot! and Socrative have potential to connect virtual lectures, lecture notes, and supplementary materials for deeper engagement with course content and assess the extent to which learning outcomes have been achieved.

In a face-to-face setting, learners complete most of their assessments outside of the classroom. Therefore, most written assessments can be transformed conveniently to an online teaching format. Oral presentations might present more challenges. However, this challenge could be met by involving video or podcast submissions and live-presentations through video-conferencing platforms. Online courses are attractive for a wide range of learners. Therefore, teachers need to adapt to various learning styles, such visual, kinaesthetic, analytic and auditory, in order to build teaching presence successfully. Based on this, the collaborative learning environment in the modules requires teachers to adapt different teaching roles. Kebritchi (2014) suggests that two methods are particularly useful in online teaching to facilitate discourse to enhance learners’ critical thinking skills. In the narrative method, the teacher engages directly in the construction of knowledge with learners. In the episodic method, the teacher facilitates rather than directs the collaboration between learners.

Overall, teachers need to possess content knowledge, use appropriate teaching styles, moderate critical discourse, communicate effectively, acknowledge and critique learners’ contributions, provide in-depth feedback, and be accessible generally, if they aim at facilitating higher-order learning outcomes in an online learning environment.

5.3 Gilly Salmon’s five-stage-model as a basis for instructional design of e-coaching courses

Gilly Salmon is one of the researchers who developed a theory for the above stated challenge: to plan and design effective online courses in higher education. She started when she worked for the Open University that used an online learning system. The Open University, which is the biggest university in the UK and Europe, has thousands of students coming from different remote areas. At the time she worked there, only rudimentary technology was used. Salmon investigated problems and everything related to the entire learning process. The result of her study was developed to help others who need information about the online learning environment and how to use the institution's online learning system. One of the findings is the so-called five-stage model (Salmon, 2000). The model provides a

framework for a structured programming of online learning. The model can be applied to many different areas of online delivery.

In the model, the focus is on supporting the learner in the online environment by gradually leading them through the various phases of learning. The key concept here is scaffolding, which refers to a variety of instructional techniques used to move the learner progressively toward greater understanding and independence in the learning process. However, there are far too many online course designs that have failed to take these aspects into account, and the results are unfortunately often visible in the learning outcomes and drop-out rates. The baseline and most important part at the beginning are *Access and motivation* and *Online socialisation*. Without these two first steps, the successful knowledge transfer and trustful relationship needed for coaching and self-determined learning will be hard to realise and achieve.

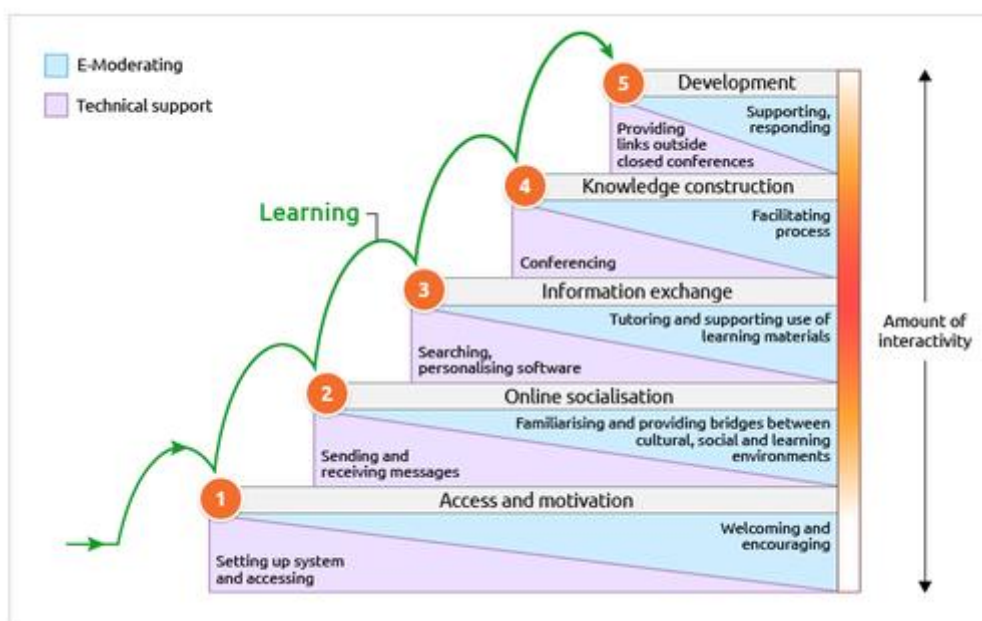


Figure 21: Gilly Salmon's five-stage-model (Salmon, 2000, n.d.)

The model has two parts for each step: the technical part (in purple) and the moderating part (in blue). The teacher needs to make sure to focus on both when planning, designing and conducting an online course.

In *Access and motivation*, the teacher makes sure everyone can access the environment and the needed resources and knows where to find everything. Attention must also be put on motivating the students. Usually discussing the learning goals and how to reach them is a good way to build up motivation, as well as simply having dialogue with each other and building mutual trust. Giving the students the experience that everyone is going to work actively together in this course and that everyone will be heard and respected is key. The second part, *Online socialisation*, can be understood as socialising with the other students and teacher(s) as well as with the course environment and resources. This often includes further building up team spirit and fostering an improved sense of belonging to a team and being a part of something. Often this can be done through some team building activities that include co-creation but are not necessarily closely linked to the actual course content, such as virtual cooking together. This has a crucial effect on increasing the students' commitment to learning and in enabling the students to take ownership of their own learning - hence reducing the

number of dropouts, which is a well-documented challenge in online learning. *Information exchange, Knowledge construction and Development* will happen as the students start to tackle the learning tasks together through dialogue and co-creation.

5.4 Instructional strategies that enable a holistic coaching approach

In the modern, post-pandemic world, higher education is increasingly utilising various modes of instruction, including fully online, hybrid, etc. alongside classroom learning. Especially if the topic for learning is such that it is relatively easy to deliver through traditional, teacher-centred lecturing, the online mode has often proved to be a sensible solution, as it can quite accurately replicate the face-to-face situation in an auditorium but also allows for greater flexibility for attending regardless location and time (if the lectures are recorded). However, if teaching is more student-centred and based on dialogue and mutual trust, the online mode has sometimes been experienced rather challenging. Coaching is one example of this kind of “teaching”, and it is because of this perceived difficulty that there is a clear need for a functioning way to implement e-coaching. This is exactly why we need the four cornerstones of coaching (see 4.4) to be taken into account when developing instructional strategies that enable a holistic e-coaching approach, some of which are introduced as follows.

5.4.1 Flipped Classroom

In the flipped classroom method, a practical implementation of the blended learning concept, traditional face-to-face teaching is flipped: the process of knowledge transfer and acquisition is shifted from the course to self-study time. This is made possible through the sensible use of e-learning elements such as lecture videos, screencasts and interactive learning units. As a result, students have a high level of personal responsibility when learning. In this way, the flipped classroom enables the students to take ownership of their learning process while the teacher is acting in the role of the designer of learning tasks, curator and creator of highly topical and accessible learning materials such as short videos introducing theories or frameworks that the students can use, as well as a tutor in flipped learning tutorial sessions. Usually the teacher prepares a set of learning tasks and provides the students with introductory learning materials designed to help them in completing the tasks independently or in small groups. This also enables students to decide on their own approach based on their needs. Then, in tutorials the students work in targeted practice. They can ask questions of understanding beforehand, deepen and repeat their learning, and work collaboratively on solutions to pre-defined problems. The teacher works as a tutor guiding them if they encounter problems on the way. The careful design of learning tasks, highly relevant and accessible learning materials and the ability of the teacher to work as a tutor or a coach in tutorial sessions is essential for the success of this approach.

However, it needs to be noted that learning in the flipped mode can be quite confronting to students whose conceptions of university teaching are that new material should be presented by a professor in a lecture that they have paid good money to attend. Therefore, students will accept the flipped way of learning when they realise that their learning is successful. With careful curriculum design, the evidence suggests that students learn in flipped mode just as well, and usually better, than they do if they are simply attending a lecture. This is actually great news because using precious time for attending a lecture, while listening, and watching and, perhaps asking questions and taking notes, can be replaced by doing things and thereby engaging in practice (Bergmann & Sams, 2012; Reidsema et al. 2017,)

5.4.2 e-portfolios

An e-portfolio (short for electronic portfolio) is a purposeful digital collection of evidence that showcases an individual's learning, achievements, and experiences over time. It is an electronic version of a traditional portfolio, which includes documents, images, videos, audio recordings, and other digital artefacts that demonstrate a person's skills, knowledge, and competencies in a specific field or discipline (Cotterill, 2007). E-portfolios are increasingly used in innovative ways in higher education as a means of documenting and reflecting on one's learning and development. They can be used to showcase one's accomplishments to potential employers, peers, or instructors, or to track progress over time. Additionally, e-portfolios can be used for assessment purposes, allowing instructors or mentors to evaluate a student's work and provide feedback and guidance (Walland & Stuart, 2022). The process of producing an e-portfolio, which for example includes writing, typing, and recording usually necessitates the synthesis of ideas, reflection on achievements, self-awareness and forward planning. Specific types of e-portfolios can be defined in part by their purpose, such as presentation, application, reflection, assessment and personal development planning). Furthermore, they can be specified by pedagogic design, level of structure, duration and other factors (Cotterill, 2007). E-portfolios can be produced using simple tools, such as presentation software or blogs, but more typically using specialist e-portfolio applications that contain a level of structure with a high level of customisation for specific contexts and support for multiple purposes.

5.4.3 Service Learning

Service learning is a teaching and learning method that combines academic instruction with community service. It provides students with opportunities to use newly acquired academic skills and knowledge in real life situations, by involves them in meaningful and relevant service to their communities while integrating this experience with their academic learning and personal development. The term of Service Learning was first invented in 1967, in reference to an internship programme that was sponsored by the Southern Regional Education Board and through which college students gained academic credit and/or federally funded finance as remuneration for work on community projects. As a pedagogical practice in higher education, Service learning was limited to a small group of participants until the mid-1980s. By the late 1980s, service-learning was growing in prominence and was finally distinguished from community service by its attention to the integration of service with academic study (Liu, 1995). The 1990s have witnessed tremendous growth in service-learning, such that it is now regarded as a "vital force in educational change". Colleges and universities have espoused a renewed commitment to civic responsibility, with service-learning as a central vehicle for fulfilling this commitment (Crabtree, 2008).

Service learning contains two main elements: engagement within the community (service) and reflection on that engagement (learning). These elements should be balanced by expecting students to “participate in an organized service activity that meets identified community needs” and “reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility”. According to Jacoby (2014), definitions of service-learning can be divided in two main parts. The first part describes SL as a form of education, and the second part of definitions defines SL as an educational philosophy. Definitions of SL as a form of education share three key elements that differentiate SL from other forms of experiential education. These elements are structured extensive reflection, application of learning in real-life settings, and relevant service. Student reflection encourages integration of theory and practice. Application of learning in real-life contexts should complement objectives of students’ future careers. Therefore, service needs to be relevant, meaningful, and tightly integrated into the

curriculum. Service-learning as a philosophy is characterized by “human growth and purpose, a social vision, an approach to community, and a way of knowing”.

Overall, the goal of service learning is to promote civic responsibility and develop students' critical thinking, problem-solving, and leadership skills while also meeting community needs. Service learning can take place at any level of education and can involve a variety of disciplines, such as social sciences, humanities, STEM fields, and health professions.

5.4.4 Problem-based learning and research-based learning

Problem-based learning (Duch et al., 2001) takes as its starting point a relatively complex problem that the students engage in solving using through a specific problem based learning process. The process involves defining the problem, identifying existing skills, knowledge and information gaps, gathering new information and theoretical knowledge needed in solving the problem and then working towards a solution as a group. The role of the teacher in problem-based learning tutorials is very close to that of a coach or a facilitator, where their task is to support the students' group work in defining the problem, identifying knowledge gaps, finding the relevant knowledge they need.

5.4.5 Situational learning

More than a specific approach to learning, situational learning (Lave & Wenger, 1991) is a view of learning that emphasises the situated nature of learning, and how it is always connected with the specific life-situation of the students. Consequences of this view of learning are if the teachers start thinking of learning as inherently tied to the specific life-situations of the students, they will realise that they will need to know more of that situation and stop relying overmuch on transfer effect of learning that supposedly allows people to take much of what they learn in a lecture hall situation into use outside it. Research has shown that learning is, in fact, often closely tied to specific life-situation of the students and that teachers are often too optimistic about the transfer of knowledge from lectures to real life situations.

5.5 e-coaching methods

The following methods are often used in training and are useful for coaching activities.

They are sorted by

Keywords: e.g. motivation, cooperation, team work, personal/team reflection, discussion, idea generation, career coaching...

They also include a reference to the four cornerstones of coaching (see 4.4) and are sorted by

Coaching elements: Trust, Dialogue, Ownership, Co-Creation

Finally, they also give a recommendation for use in Gilly Salmon's five-stage-model.

Stages of Gilly Salmon's Model:

Stage 1: Access and Motivation

Stage 2: Online Socialisation

Stage 3: Information Exchange

Stage 4: Knowledge Construction

Stage 5: Development

5.5.1 Check-in / Check-out

Keywords: Personal reflection, feedback

Coaching elements: Trust, Dialogue

Stage: 1, 5

Brief description

Either checking-in or checking-out is a simple way for a team to open or close a process, symbolically and in a collaborative way. Checking-in/out invites each member in a group to be present, seen and heard, and to express a reflection or a feeling.

Objectives

- Checking-in emphasises presence, focus and group commitment
- Checking-out emphasises reflection and symbolic closure

Requirements

Participants: Any number

Time: 5-30 minutes

Online tool: Any synchronous communication platform (Zoom, Microsoft Teams, etc.)

Implementation guidelines

Step 1:

Checking-in:

Invite each member of the group to share one thing they “check-in” with. This could be a feeling, a reflection from the previous day, an attitude they bring into this session, or something playful like “the animal that represents my mood today.” Choose a check-in question based on the group and the purpose/content of the program. Set a time frame. You may also use a picture that visualises and supports your questions.

Examples:

- In your display name, write your first name + how you're feeling right now.
- In your display name, write your first name + your intention to make today's online meeting successful.

- Check-in using an emoji.
- Check-in by showing us your power pose for this meeting.
- Check-in by changing your virtual background to a scene that means something to you, and tell us about it.

Step 2:

One-by-one, participants check-in, either by handing over to the next person or by being called by the teacher or in alphabetical order, etc. Once every person has checked-in one time, check-in is over.

Step 3:

Checking-out:

Invite each member of the group to share one thing they “check-out” with. This could be a feeling, a reflection experience, the most important thing they take with them. Choose a check-out question based on the group and the purpose/content of the program. Set a time frame.

Step 4:

One-by-one, participants check-out, either by handing over to the next person or by being called by the teacher or in alphabetical order. Once every person has checked-out one time, check-out is over.

References

Check-In / Check-Out Hyper Island: <https://www.sessionlab.com/methods/check-in-check-out>
tscheck.in: <http://tscheck.in/>

5.5.2 Student polling and voting

Keywords: Activation, participation, feedback, social presence

Coaching elements: Dialogue, co-creation

Stage: All stages possible

Brief description

The use of polling and voting in online courses is a way of easily engaging students and getting feedback at the same time. Especially when there is not a lot of time for student engagement, like e.g. in big group lectures, this is an option for some kind of dialogue and co-creation. The strength of engagement depends very much on the polling and voting questions.

Objective

A really interesting poll or survey question can capture students’ attention and foster discussion and community building.

Requirements

Participants: 5+

Time: Maximum five minutes (without optional discussion)

Online tool: Mentimeter

Implementation guidelines

There are various opportunities for polling and voting, at the beginning of a course students may vote on cooperative questions like ways of communication with the lecturer or the fellow students. During the course they may be asked how the course is going, as formative feedback, or they may vote on making decisions about their learning paths or assignment topics, thereby giving students a voice in the direction and quality of the course. For a more in-depth participation of students (for more co-creation) you may poll students about topics or issues for synchronous or asynchronous discussions. Polling and voting can also enhance dialogue between students as different opinions and topics may be shared and discussed. Make sure to pay attention to polling/voting results, share and address them. Some videoconferencing applications have integrated survey and polling options (e.g. Zoom, BigBlueButton), some are built directly into the learning management system. There is also a wide variety of web-based survey online tools, such as Mentimeter. Be aware of data-security issues and data-collection of some applications. Students could design polls themselves and submit the collected data to the course instructor. If there are multiple sections of the same course or training experience, surveys and polls could be used across them and then shared, so that instructors and students could note any similarities and differences across the course sections.

Reference

Adding Some TEC-VARIETY: https://tec-variety.com/TEC-Variety_eBook_5-4.pdf (page 75)

5.5.3 **Active listening**

Keywords: Dialogue, team work, reflection

Coaching elements: Trust, dialogue, ownership

Stage: 2, 3, 4, 5

Brief description

This activity supports participants to reflect on a question and generate their own solutions using simple principles of active listening and peer coaching. It is an excellent introduction to active listening but can also be used with groups that are already familiar with it. Participants work in groups of three and take turns being: the subject, the listener, and the observer.

Objectives

It helps participants to reflect on a question and generate their own solutions.

Requirements

Participants: 2-40

Time: 60-120 minutes

Online tool: Online whiteboard (e.g. Miro, Mural), video conferencing tool (e.g. Zoom)

- Pick an online whiteboard online tool that allows you to use a large, zoomable canvas.
- Use a video conferencing online tool where you can assign the participants into breakout rooms (e.g. Zoom).
- When briefing the exercise and assigning groups of three to work together, keep all participants in the main video conference room and explain best practices. Use your online whiteboard to collect opening responses and feedback.
- After this step is completed, turn on breakout rooms so each group can work on their questions and play each of the three roles.
- After breakout conversations are completed, have participants return to the main room where you can debrief the exercise.
- When facilitating group discussion, we recommend participants use non-verbal means to indicate they would like to speak. You can use online tools like Zoom's nonverbal feedback options, a reaction emoji, or just have people put their hands up. The facilitator can then invite that person to speak.

Implementation guidelines

Step 1:

Give a brief introduction to active listening. Explain that when we think and discuss, we often tend to focus on several people and questions at once, shifting our attention and focus back and forth. When we listen to others, we tend to do so in a discussion-oriented way, thinking about "what am I going to say next" rather than listening to the other person with full presence and attention. A good way to explore a question or problem is through active listening, focusing on one person at a time.

Step 2:

Introduce the three roles that the participants will take during the exercise:

The subject: The role of the subject is to examine the question or problem from their personal perspective. The person in this role should remember: keep the focus on yourself and let your thinking flow naturally, being guided by the active listener.

The active listener: The role of the active listener is to listen with full presence and concentration. It means listening with curiosity, observing, paraphrasing what you hear, and following the topic with open-ended questions. This person should keep the following in mind: ask open-ended questions to support the person's reflection; do not give advice.

The observer: The role of the observer is to observe the process without speaking. The observer makes observations from an outside perspective and sees and hears things that the listener and subject may not see. This person should keep the following in mind: remain silent throughout the process; observe and note what is seen and heard; after the subject is finished, share the observations with the others.

Step 3:

Pose the question or problem. The question or problem is what each topic should explore and think about. It could be a common question for the whole group (e.g., "What are the biggest barriers to change in my career and how can I work to overcome them?") or each participant can ask their own question or problem (e.g. choose a challenge you are currently struggling with).

Step 4:

Divide the participants into groups of three. Make it clear that each participant should take each role for a set amount of time. Give the groups about an hour so that each round can last 20 minutes. Explain that the groups should watch the time and make sure there are three rounds of equal length.

Step 5:

Once participants have finished, debrief the exercise, using questions like:

- What happened to me during the exercise?
- How did it feel to be an observer?
- How did it feel to be the subject?
- How did it feel to be an active listener?
- What did I learn about myself?
- How can I apply insights from this exercise?

Reference:

Active Listening, Session Lab: <https://www.sessionlab.com/methods/active-listening-yrtil3>

5.5.4 **Six thinking hats**

Keywords: Team work, discussion, idea generation

Coaching elements: Dialogue, trust, ownership, co-creation

Stage: 2,3,4,5

Brief description

The six thinking hats is a method invented by Edward de Bono in 1986 (see de Bono, 1990) to design creative group discussions. In this method, the participants take on six roles represented by hats in the colours white, red, green, black, yellow and blue. The aim of this method is to approach a topic holistically and from different angles, thus creating the most efficient discourse possible. It can be used during the idea generation process to provide an in-depth analysis of the idea potential. Each participant of the idea generation process needs to have the opportunity to "wear" each hat in order to achieve a better understanding of the idea potential.

White (Data, facts, figures)



The white thinking hat provides a neutral questioning approach that focuses on the available data and facts about an idea. Questions related to this hat can be "What information is available?" and "What facts do we have?". The goal of these questions is to obtain objective data, facts, and figures about the idea being discussed.

Red (Emotions and feelings)



The red hat represents feelings and improves the insight into the ideas through intuition, gut feeling and emotions. With this hat, the person is able to express their emotions and feelings about the idea. The questions that can be asked in this part are: "How does the idea make you feel?" and "What is your gut reaction to the idea?".

Black (Caution and risks)



With the black hat, the person is made to think carefully and defensively about the ideas. The goal of this approach is to focus on warnings, risks, or cautions and to identify difficulties and vulnerabilities. The questions that can be asked during this discussion are, "What are the potential risks of the idea?" and "Why might the idea not work?" The purpose of this hat is to highlight the weaknesses of the idea and address them, along with refining and improving the ideas.

Yellow (Optimism)



Unlike the black hat, the yellow hat challenges the logical-optimistic evaluation of an idea. It improves the understanding of the advantages and benefits, which certainly helps the person or team to see the value of the idea. The questions associated with this hat are, "What are the benefits of the idea?" and "Why do you think this idea is good?"

Green (Ideas)



The green hat represents creative thinking with the goal of developing new ideas, possibilities and alternatives from existing ideas. With this hat, the person can develop new solutions to previously defined problems or search for new ideas from a creative perspective.



Blue (Control)

The blue hat stands for an overview of the idea and for process control. The blue hat organises the next steps, proposes an action plan and sets goals for the idea. It is also used to summarise and conclude the potential of the idea.

Objectives

With the help of the Six Thinking Hats, the communication process in groups is designed efficiently. The common change of perspective causes a comprehensive view on the topic and avoids unproductive, controversial discussions. Possible areas of application include:

- Idea generation
- Idea evaluation
- Decision making in a team
- Working out possible solutions to problems
- Optimisation of existing solutions
- Development of strategies
- Assessments (e.g. of products, projects, project portfolios)

Requirements

Participants: Minimum 6

Time: 30-60 minutes (per question and participant)

Material: Online whiteboard (e.g. Miro, Mural), hats in six colours (alternatively badges)

Implementation guidelines

Step 1: Prepare the meeting

Before the lesson begins, inform participants about the topic of discussion. Basic knowledge and core concepts should be known to all group members. To relieve yourself as the leader, you can appoint a timekeeper and a minute taker in advance.

Step 2: Assign roles

At the beginning of the lesson, distribute the coloured hats to the participants and determine the type of role in which the team will think and discuss. Give each person some time to become familiar with the role. During your discussions, also make sure that no one takes off the current hat, so always argue using the characteristics that the hat requires.

Step 3: Finding ideas

In the second row, each participant expresses their opinion on the question from the current hat perspective. The recorder records what has been said on an online board. Once each group member has expressed their opinion, it is time to switch perspectives. To do this, everyone changes hats and the discussion begins again. As with brainstorming, the same applies here: In this phase, ideas are collected, not evaluated.

Step 4: Evaluate ideas

After the team has put on each hat once, you now move on to the evaluation. Again, you as the leader are required to collect, consolidate, and work out the next steps. The phase ends when all ideas have been processed and the allotted time has elapsed.



Practical tips

Tip 1 - Allow each hat identical speaking time

The more the field of participants differs in personality (e.g. temperament, extroverted vs. introverted orientation), the more important the role of the moderator. As the methodological leader, make sure that a particular hat in the team does not get too much space and speaking time.

Tip 2 - Start white hat, end blue hat

To approach a problem in an unbiased way, the white hat - the neutral, objective and dispassionate analyst - should open a round. The blue hat - the moderator - on the other hand, ends the round with summarising words.

Tip 3 - Note down ideas and only then discuss them

Analogous to brainstorming, the 6-hats method also leads to group dynamic processes. One person's statement influences the group members in their thoughts and actions. To reduce such effects, simply ask the participants to write down their ideas on a sheet of paper. At the end of a round, visualise the results together.

Tip 4 - Use 6-hats in solo mode

The 6-hats approach can also be used in solo mode. If the person is stuck in a tricky situation, the method helps to get a simple look at the situation from the point of view of the six hats.

References

Six thinking hats: <https://www.debonogroup.com/services/core-programs/six-thinking-hats/>

What Is six thinking hats? (2014): <https://www.youtube.com/watch?v=UZ8vF8HRWE4>

5.5.5 Peer instruction

Keywords: Team work, new content

Coaching elements: Trust, dialogue, ownership, co-creation

Stage: 3, 4

Brief description

Peer instruction is an interactive teaching method in which students discuss underlying concepts with each other during the lecture. Peer instruction was originally invented by Eric Mazur, professor of physics and applied physics at Harvard University, in the early 1990's. The underlying assumptions that this method builds on are:

- Regular lectures rarely allow students to practice critical thinking and tempt them to take a superficial approach to learning.
- When students fail to see the connection between different topics and have difficulty solving new or unfamiliar problems, it is often because they lack a clear understanding of the underlying concepts of the curriculum.
- Formative assessment and feedback are important parts of the learning process - but they are not part of the design of a traditional lecture.
- Using concept questions can improve students' understanding and ability to apply what they have learned to new situations, enhance their critical thinking, and increase their enthusiasm for learning.

Objectives

Peer instruction actively engages the students in their own learning. Carefully chosen questions give students the opportunity to discover and correct their misunderstandings of the material, and, in the process, learn the key ideas from one another.

Requirements

Participants: Minimum 3

Time: About 30 minutes

Online tool: Mentimeter

Implementation guidelines

1. The instructor poses a multiple-choice question.
2. Each student votes for an answer.
3. Students discuss their thinking with their peers.
4. Students re-vote.
5. The instructor reveals and explains the correct answer.

Some tips for writing good multiple-choice questions are:

- Be sure to make all answers realistic (e.g. use typical misconceptions). This helps the student to think instead of just guessing.
- Formulate questions succinctly and accurately.
- Avoid negative phrasing, using words like 'not' as it is often overlooked or misunderstood.
- Avoid making the correct answer significantly longer or in other ways notably different from the wrong ones.
- Formulate incorrect answers that distinctly differ from one another.
- Make sure that incorrect answers are on your students' level of knowledge.
- Ask more questions that urge students to use higher order thinking skills than retrieving facts from memory

References

Peer Instruction - Learning at DTU: <https://elearning.dtu.dk/teach/peer-instruction>

Peer Instruction - Rochester Institute of Technology: <https://www.rit.edu/teaching/>

Peer Instruction for Active Learning - Eric Mazur: <https://www.youtube.com/watch?v=Z9orbxoRofI>

5.5.6 Well-formed outcome model

Keywords: Goal setting

Coaching elements: Ownership

Stage: 3

Brief description

This tool helps the student to define the outcome or goal that they want to achieve. It enables them to work through what it will take to achieve their goal.

Objectives

Goal setting

Requirements

Participants: Minimum 1

Time: 15 minutes

Online tool: Online whiteboard (Miro, Mural)

Implementation guidelines

Follow each of the following steps asking questions as you go along and encouraging the student to write or draw their thoughts.

1. The goal

Ask to set the goal in a positive frame

2. Fast forward

Ask them to imagine that they have achieved their goal.

Ask questions like:

“What will you hear, see and feel?”

“What will your friends and colleagues be saying?”

“What do you notice that is different?”

“What will you look like?”

3. The journey

Still thinking about this from the future, ask questions like:

“How did you get here?”

“What time frame did you work?”

“What have you done to achieve this?”

“Who else has been involved?”

The answers to these questions usually become the milestones of an action plan.

4. Reality check

Return to the present and think about how the goal fits with the student’s real world. Ask questions like:

“What will your loved ones get from this?”

“How will it impact your partner?”

“How does it fit with your daily routine?”

“What might you have to give up or lose to achieve your goal?”

“Is achieving the goal worth it?”

5. Resources

Think about what they will need to make it happen.

This will include time, money, skills, etc.

You will also consider the internal resources they need, such as resilience, tenacity, positive attitude.

6. Desirability

Now that they have a really clear outcome, it is time to be honest about how much they want it.

“Is this still what they want to do?”

“On a scale of 1 to 10 how much do they want to make the goal become reality?”

“If they score less than 10, what's missing for them?”

“What would turn the score into a 10?”

7. First step

“Agree the first step to making this happen.”

“Commit to who will do that first step, and when.”

Reference

Well-formed outcome (Coaching Resources: Coaching tools and models):
<https://www.nelacademy.nhs.uk/coaching-resources-coaching-tools-and-models>

5.5.7 Letter to myself

Keywords: Personal, team reflection

Coaching elements: Trust, Dialogue

Stage: 3, 4, 5

Brief description

Often done at the end of a workshop or program, participants write a letter to their future selves. They can define key actions that they would like their future self to take, and express their reasons why change needs to happen.

Objectives

Support participants in applying their insights and learnings

Requirements

Participants: Any number

Time: 5-30 minutes

Online tool: Etherpad

Implementation guidelines

Step 1:

Explain that students will be writing a letter to their future self and that this will help them apply their insights and what they have learned from the workshop or program. Tell them that the letters will be sent in X months and that they should keep this in mind when writing. You can set the time frame together with the group. This exercise can be as open or closed as you think is appropriate. You could restrict them to three bullet point actions that they need to follow up on. Or you could give them the freedom to write whatever they want to themselves. Judge the needs of the group and the purpose of the session.

Step 2:

Write a focus question or prompts on a digital whiteboard/in the chat/on a PowerPoint slide. These can either be defined by you, or through discussion with the group. For example:

- “What will I achieve by X date?”
- “What will I do tomorrow, next week, next month?”
- “How do I feel now about my work/job/team? And how do I want my future self to feel?”
- “Don’t forget...”
- “I want to change... because...”

Give them around 10-30 minutes to complete their letters.

Step 3:

Let them add their content to the digital format, you may collect the letters and send them yourself later (if online tools like Etherpad are not eligible). Send the letters. If possible reflect together with the group after time x / after reception of the letters.

References

Letter to myself (SessionLab): <https://www.sessionlab.com/methods/letter-to-myself>

5.5.8 **I used to think...But now I think...**

Keywords: Personal, team reflection

Coaching elements: Ownership

Stage: 5

Brief description

A simple but effective closing activity that could lead to identifying the learning point or outcomes for participants and measure the change in their behaviour, mind-set or opinion regarding the subject.

Objective

- To identify the learning points
 - To help participants reveal changes in their perspectives
-

Requirements

Participants: 4+

Time: 5-15 minutes

Online tool: e.g. Miro

Implementation guidelines

This is a good reflection protocol following an activity or event that should lead to learning or experiencing something new, or perhaps a change in attitude about something. Participants are asked to answer two questions silently (in writing if it is a large group or if it is a longer activity with many events).

1. I used to think...
2. but now I think...

Allow two to five minutes for thinking or writing, depending on the length of the activity and the expected learning. Then participants can share their responses with the group. You can collect them on flipchart paper or even type them up to share with participants or others later. If you have a large group, break them into smaller groups so that each participant can share something.

Reference

I used to think but now I think (SessionLab): <https://www.sessionlab.com/methods/i-used-to-think-but-now-i-think>

5.5.9 History map

Keywords: Personal, team reflection

Coaching elements: Trust, dialogue, ownership

Stage: 3, 4, 5

Brief description

The main purpose of this activity is to make the students remember and reflect on what they have experienced and create a collective experience and shared history. Each individual will have a shared idea of what the group experienced together. Use this exercise at the end of a project or programme to reinforce what was learned, celebrate highlights, and create closure.

Objectives

Remind and reflect on what students groups have been through and to create a collective experience.

Requirements

Participants: 2-40

Time: 60-120 min

Online tool: Online whiteboard (e.g. Miro, Mural)

Draw the timeline in the online whiteboard and invite participants to add to it throughout the exercise. If you are using Mural, you can use voting features such as Mural's voting session online tool when voting during the final step.

Implementation guidelines

Step 1:

Draw a timeline representing the period of a project or team experience. Include dates and a few key events.

Step 2:

Ask students to draw in elements of their experiences. They can draw in their high and low points of the journey as well as insights, emotional highs and lows, challenges, successes, frustrations, stories and surprises, situations, lessons learned, and anything else that meant something to them. Allow enough time for the online whiteboard to get as full as possible (about 15-30 minutes, depending on the size of the group and length of the timeline).

Step 3:

After the map has been created, ask the students to reflect in silence on the experiences they have shared. Ask them to begin thinking about the most important moments for them, individually. Give about 5-10 minutes for this step.

Step 4:

Finally, one-by-one, students describe the moment that has been the most important to them.

References

History map (SessionLab): <https://www.sessionlab.com/methods/history-map>

5.5.10 One-minute paper

Keywords: Team work, feedback, reflection

Elements: Trust, dialogue, ownership

Stage: 3,4, 5

Brief description

Students have 60 seconds – either at the end of a work section or at the end of a lecture – to write down on paper some anonymous responses about one aspect of teaching that day. By evaluating the responses, you will get a sense of what students have learned, where there may be gaps in their knowledge, and what aspects of your teaching practice they are responding to.

Since students only have one minute to write a response, you can give prompts such as the following:

- Write down the three key things you learned in today's lecture.
- In your own words, tell me what you understand by [insert concept here].
- What was the most confusing point in today's class?
- How useful was the group exercise that we did in class today? Please give details.

Objectives

It prompts students to reflect on the day's lesson and provides the instructor with useful feedback.

Requirements

Participants: Any number

Time: about 5 minutes

Online tool: Mentimeter

Implementation guidelines

Create a simple two-question survey in Google Forms that uses the paragraph/long answer question type. At the end of the lesson, give students the link to the survey and a time by which they should submit their response. Using the form, students can complete this task quickly and easily. After students submit their one-minute entries (surveys), open the Google Form results in Table View to read students' responses. Note that students' responses are time stamped in the spreadsheet, so you

do not necessarily need to create a new form for each one-minute post. The timestamp will tell you which lesson the responses were written for. Once you have a specific response from your students, it is important to have plans for how you will handle them. Some possibilities are:

- Send questions and answers as an email follow-up to the class
- Answer commonly asked questions at the start of the next class
- Prepare a handout or content page in your course site, explaining confusing content
- Revise course content to address frequently occurring questions

References

The One-Minute Paper (University of Rochester): <https://www.rochester.edu/college/teaching/teaching-guidance/one-minute-paper.html>

One-Minute Paper: <https://oncourseworkshop.com/self-awareness/one-minute-paper/>

5.5.11 **Muddiest point**

Keywords: Critical thinking, idea generation, reflection, feedback

Coaching elements: Trust, dialogue, ownership

Stage: 3, 4, 5

Brief description

Students reflectively write about the muddiest point (e.g. of the lecture, of the process, of their learning, etc.) in a short format. The 'muddiest point' is the most confusing, unclear, insecure, tense aspect of the class or the coaching process.

Objective

The aim of these short reflections is to help the learners to repeat the main points and summarise the content and help the teacher to check the learners' understanding or problematic points in the process. The method strengthens the feedback culture and allows for quick and easy support.

Requirements

Participants: Any number

Time: max. 5 minutes

Online tool: Etherpad

Implementation guidelines

The teacher asks students to write down their most difficult point and either send it directly to the teacher or post it in an online document. The whole process should not take long, and it is important to respond to the students' notes. The teacher should address and clarify the unclear points (e.g. if comprehension is the problem) or organise a discussion (e.g. if something in the process is the problem, if a tension needs to be addressed). To share notes, you can use email, chats, and online forums in the learning management system, blogs, wikis, online collaboration tools, etc. Peer feedback is possible depending on which online tool you use. The squishiest point can be used frequently – perhaps optional for those who really have a squishy point. If used regularly, this should not take much time. A variation of this task would be to ask for the "clearest point" where participants write about the concepts and principles they learned firmly that day or week.

References

Instructional Resources: Muddiest point: <https://kb.wisc.edu/instructional-resources/page.php?id=103368>

5.5.12 **What? So what? Now what?**

Keywords: Reflection

Elements: Ownership, dialogue

Stage: 3, 4, 5

Brief description

One of the simplest frameworks of reflection, by moving through three reflective stages, students think about an experience, its implications, and what that means for the future.

In practice students ask themselves the three questions after a critical incident that has taken place wanting to extract learning from.

- **'What?'** helps the student describe the situation they want to learn from. The student should identify the facts and feelings of the situation.
- **'So What?'** allows the student to extract the meaning of 'What?'. Moreover, the student should question what knowledge the student and others had in the situation, and what knowledge or theories that could help make sense of the situation.
- **'Now what?'** allows the student to create an action plan for the future based on the previous questions.

Table 3: What? So what? Now what? (own illustration)

What?	So what?	Now what?
<ul style="list-style-type: none"> • This is the description and self-awareness level and all questions start with the word "what". • This stage combines the reflective processes of identifying the experience and describing it in detail. 	<ul style="list-style-type: none"> • This is the level of analysis and evaluation when we look deeper at what was behind the experience. • This stage breaks down the situation and tries to make sense of it by analysis and evaluation, drawing on previous experience and knowledge. 	<ul style="list-style-type: none"> • This is the level of synthesis. Here we build on the previous levels of these questions to enable us to consider alternative courses of action and choose what we are going to do next. • This stage combines the process of exploring alternatives and planning actions that will be put into practice.
Examples	Examples	Examples
<ul style="list-style-type: none"> • What happened? • What did I do? • What did others do? • What was I trying to achieve? • What was good or bad about the experiences? 	<ul style="list-style-type: none"> • So what is the importance of this? • So what more do I need to know about this? • So what have I learnt about this? 	<ul style="list-style-type: none"> • Now what could I do? • Now what do I need to do? • Now what might I do? • Now what might be the consequences of this action?

Objectives

What? So What? Now What? is a reflective model that helps individuals and teams evaluate an experience or a recent event so that they can identify ways to improve or act.

Requirements

Participants: Any number

Time: About 30 minutes

Online tool: Video conferencing tool (e.g. Zoom), online whiteboard (e.g. Miro, Mural)

Implementation guidelines

Although you should make sure to do all the rounds and (at least) start each round individually, you can be flexible with the time boxes: Begin by introducing What, So What, Now What and select a situation or incident that the group will be reflecting upon (2 minutes).

Round 1: What? (8 minutes)

- Invite people to individually consider what they noticed and what facts or observations stood out for them (2 minutes)
- Invite people to share their individual observations in small groups. Encourage people to stick to observations and facts, and not to jump to interpretations or conclusions. If this happens, invite people to ask: “How did you notice?” or “What did you observe that made you arrive at that idea?” (5 minutes)
- Invite the small groups to share and collect salient observations with the whole group (2 minutes)

Round 2: So What? (8 minutes)

- Invite people to individually reflect on the observations. Why are those observations important? What patterns do you see? What conclusions can we draw? (1 minute)
- Invite people to share their interpretations and conclusions in small groups (5 minutes)
- Invite the small groups to share and collect salient patterns, conclusions and interpretations with the whole group (2 minutes)

Round 3: Now What? (8 minutes)

- Invite people to individually reflect on the previous round. What next steps make sense based on the conclusions? What should we invest in as a group based on what we know now? (1 minute)
- Invite people to share next steps in small groups (5 minutes)
- Invite the small groups to share and collect salient next steps with the whole group (2 minutes)

References

Create shared understanding with ‘What, So What, Now What’: <https://medium.com/the-liberators/create-shared-understanding-with-what-so-what-now-what-6dda51d5bcf9>

5.5.13 Team self-assessment

Keywords: Reflection in teams

Coaching elements: Trust, dialogue, co-creation

Stage: 3, 4, 5

Brief description

This is a structured process that teams can use to examine the way they work together. The streamlined structure supports team members to be open and honest in their assessment. After

individual reflection, the team creates a collective map that can serve as a basis for further discussion and action. The assessment is based on approximately six dimensions. Each of these dimensions encourages the team to reflect on and analyse a different critical element of their behaviour.

Objective

Support teams to explore the way they work together.

Requirements

Participants: 2-10

Time: 60-120 minutes

Online tool: Video conferencing tool (e.g. Zoom), online whiteboard (e.g. Miro, Mural)

1. Choose an online whiteboard tool that allows you to use a large, zoomable canvas.
2. Set up each of the six dimensions for the exercise on your canvas and invite participants to zoom in and add post-it notes to each section during the review phase of this exercise.
3. Invite all participants into the document to share their ideas, but make it clear what rights they have to edit.
4. When facilitating group discussions, we recommend using nonverbal tools to signal to participants that they want to speak up. You can use tools like Zoom's nonverbal feedback options or a reaction emoji, or simply have participants raise their hand. The facilitator can then ask that person to speak up.
5. In Step 4, use voting features like Mural's voting tool during the point voting process. You can also add comments in Google Docs or ask participants to add a thumbs-up emoji to an idea in Slack to gather votes if you use these tools.

Implementation guidelines

A team is a system. It is complex and made up of multiple, interlocking parts. Most teams work and evolve organically without much attention to designing the work process, exploring interpersonal relationships, and challenging traditional notions of hierarchy. By taking the time to do a self-assessment, a team can bring implicit things to the surface and make them explicit. Only when they are explicit can a team talk about them and change them.

Step 1:

This method uses six dimensions to frame the reflection and discussion. Write these on an online whiteboard or show them on a screen for the students to copy.

- Team Relations and environment
- Information and decision-making

- Responsibility and accountability
- Learning and individual purpose
- Collective purpose
- Profit and productivity

Instruct them to draw five horizontal lines dividing them into six equal sections and label each section with a dimension. Now give them 30 minutes to think quietly about these dimensions. Have them individually write down statements that apply to each dimension. These should all complete the sentence:

As a team, we....

Some will likely be positive or celebratory; others will likely be critical or developmental. Ask members to arrange their statements on the paper so that the developmental statements are on the left and the celebratory statements are on the right.

Step 2:

Draw a large version of the six sections they worked on a whiteboard. The goal of this step is to bring everyone's statements together to see where the team agrees and disagrees on the six dimensions.

One by one, ask team members to share two to three post-it notes on each dimension. They should only read out what they wrote. No further explanation or justification is needed at this point.

Step 3:

The goal of this step is to narrow down the statements and remove any clear overlap. Ask someone on the team to calmly cluster the statements. When they feel they are done, ask the group if anyone is eager to change the clusters. If so, ask them to make the changes. Repeat this process until no one objects to the clustering. It may take a few rounds, but eventually you will arrive at a selection of statements that no one strongly agrees with. This is a group decision based on agreement.

Step 4:

The aim of this step is to find out which statements are particularly dear to the group. This is done by voting on points. Each team member should use a sheet with small coloured sticky dots. They should all be the same colour so you cannot tell who voted for which statement. Ask team members to look at the clustered statements. Have them stick a dot on the statements they think are important to this team. The things they think should be addressed, changed, or celebrated. There is no limit to the number of dots. When everyone is done voting, step back and look at the board. The distribution, density, and frequency of the points will give you an immediate sense of what the team thinks is important.

Step 5:

Now is the time for a group discussion. The team should decide what to do with this information. Here are a few suggestions:

- Formally celebrate the positive statements in some way.
- Schedule six discussion sessions over the next few weeks, each one focused on one development-oriented statement from one of the dimensions.

Facilitator notes: Collaboration is key to this document being useful. The information and insights belong to the team. It is now the team's responsibility to make change.

Reference

Team self-assessment (SessionLab): <https://www.sessionlab.com/methods/team-self-assessment>

5.5.14 Team canvas session

Keywords: Team work, goal setting, roles in team

Coaching elements: Trust, dialogue, co-creation

Stage: 2, 3, 4, 5

Brief description

The team canvas is business model canvas for teamwork. It is an effective technique to facilitate getting teams aligned about their goals, values and purposes, and help team members find their role on the team.

Objectives

Team canvas is a strategic framework that helps bring team members on the same page. It is made to align teams, increase cohesion and performance and to create productive team culture, fast. Team canvas works across multiple touchpoints:

- Creating a team
- Clarifying goals and addressing overall team performance (e.g. when you feel stuck as a team, or when you need to get a lot of stuff done);
- Growing and onboarding new team members;
- General alignment sessions (recommended every 2-3 months).

Requirements

Participants: 2-8

Time: 90-150 minutes

Online tool: Online whiteboard (e.g. Miro, Mural)

Place each topic in a different area of the board, spreading them out as if they were on the walls of a room. Invite participants to visit each area and add their ideas. If you are not using an online whiteboard, we recommend using an online collaboration tool, such as Google Docs, to collect the

information for each step under a separate heading. Invite all participants to the same document, but clearly define editing rights.

Implementation guidelines

Introduce the team canvas as an online tool to align team members and better understand your team's goals, roles, and values. Go through each step with the team, making sure to ask the questions for each segment. Encourage them to write down their answers on slips of paper and discuss them with the team. There are fields that the entire team should agree on:

1. People and roles (5 minutes)

Ask people to put their names on stickies, as well as their roles. If a person has multiple roles, use separate post-its.

Questions:

“What are our names?”

“What are the roles we have in the team?”

“How are we called as a team?”

2. Common goals (10 minutes)

Ask the team to agree on common goals.

Questions:

“What do you as a group really want to achieve?”

“What is our key goal that is feasible, measurable and time-bounded?”

3. Personal goals (5 minutes)

Ask the team members about the individual goals they have for the project.

Questions:

“What are our individual personal goals for this project?”

“Are there personal agendas that we want to open up?”

4. Purpose (10 minutes)

Ask the team to go one step beyond their common goal, and ask them why they do what they do.

Questions:

“Why are we doing what we are doing in the first place?”

“What is something more important, which makes us pursue our common goal?”

Examples:

Create a positive impact on people's lives through social innovation

Make people's life easier and stress-free through internet of things innovation

5. Values (10 minutes)

Ask the team what are the core values, the most important principles that they want to share within the team. The team should agree on values, so everyone accepts the final set.

Questions:

“What do we stand for?”

“What are guiding principles?”

“What are the common values that we want to be at the core of our team?”

6. Strengths and assets (15 minutes)

Ask the team to share the key pieces of skills (both hard skills and soft skills) and assets available within the team. Don't dismiss 'insignificant' stuff. You might find that the team has the capacity for martial arts, running marathons or persuading people. Encourage people to share something about themselves, as well as note important qualities they see in their teammates.

Questions:

“What are the skills we have in the team that will help us to achieve our goals?”

“What are interpersonal/soft skills that we have?”

“What are we good at, individually and as a team?”

7. Weaknesses and development areas (15 minutes)

Ask the team to share the key weaknesses and areas for improvement that they see in themselves, as well as obstacles they face as a team. Make an accent on reporting what people can find in themselves, rather than discussing other's weaknesses.

Questions:

“What are the weaknesses we have, individually and as a team?”

“What should our teammates know about us?”

“What are some obstacles we see ahead of us that we are likely to face?”

8. Needs and expectations (10 minutes)

Ask the team to express the needs they have in order to be successful. Think of this as a follow up to the previous two sections: once team members express their strengths and weaknesses, they should be able to express the needs they have to amplify strengths and be at their best despite the weaknesses.

Questions:

“What does each member of the team need to be successful?”

“How could the team help each member with their needs?”

9. Rules and activities (10 minutes)

Ask the team to agree on common rules and activities. Think of this as an outcome of the previous sections: a concrete set of rules and activities they want to implement.

Questions:

“What are the rules we want to introduce after doing this session?”

“How do we communicate and keep everyone up to date?”

“How do we make decisions?”

“How do we execute and evaluate what we do?”

Wrap up (5 minutes)

As you close the team canvas workshop, ask the team members to tell you about one single most important insight that they gained during the workshop.

References

Team canvas session (SessionLab): <https://www.sessionlab.com/methods/team-canvas-session>

Team canvas: <http://theteamcanvas.com/>

5.5.15 **Buzz groups**

Keywords: Discussion, reflection

Elements: Trust, dialogue

Stage: 2, 3, 4

Brief description

Students talk in small groups of two to each other. This is a very short version of a group discussion.

Objectives

By discussing and expressing their own thoughts the student's learning gets stimulated. Furthermore, this method offers information and experiences for the participants on which they can further build on. Another aspect is that it helps the participants to get acquainted with each other.

Requirements

Participants: 2+

Time: about 5 minutes

Online tool: Padlet

Implementation guidelines

1. Place students in pairs or small groups using group rooms
2. Assign a task or discussion topic for a very short period of time
3. Optional: attach instructions to a document or slide
4. Optional: give them a collaborative space to take notes (e.g. Etherpad)
5. Optional: Ask the group to designate someone to report back to the entire group.
6. Optional: Upon completion of the group work, consider the shared document as a group and ask students to create a summary of their discussion. If you do not have much time, share the link to the shared document and post it in Moodle.
7. If no summary is planned, allow a small window of time for possible questions.

References

Buzz group (SessionLab): <https://www.sessionlab.com/methods/buzz-group>

5.5.16 Evaluation grid - evaluate solutions in groups

Keywords: Team work, idea generation

Coaching elements: Ownership, co-creation

Stage: 3, 4

Brief description

The evaluation grid is a structured method for evaluating ideas, in which criteria are defined beforehand with which the proposals can be evaluated. In the evaluation grid, the individual solution proposals are entered line by line, and the various criteria are listed in the columns. These can be additionally provided with a weighting in order to give the individual criteria a different significance.

Objectives

In a working group, several ideas for solving a problem can be developed and evaluated according to several, previously defined criteria. The evaluation grid is suitable for questions where several criteria have to be considered. The weightings can be used to additionally emphasise individual criteria. If all criteria are equally important, the weighting can be omitted.

Requirements

Participants: Minimum 1

Time: 20 minutes

Online tool: Google Sheets, Trello

Implementation guidelines

In the evaluation grid, the individual solution proposals are entered line by line, and the various criteria are listed in the columns. These can be additionally provided with a weighting in order to give the individual criteria a different significance.

Table 4: Example of evaluation grid (own illustration)

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Sum
Weighting	x3	x2	x2	x2	x1	x1	
Solution 1							
Solution 2							
Solution 3							
Solution 4							

The proposed solutions are graded with points from 1 (= very bad) to 10 (= very good). For example, one criterion could be "cost of realising the proposal". A score of 1 would mean that very high investments would be needed to realise the solution, a score of 10 would mean that the investments would be very low. (In the case of costs, it is useful to assign concrete sums to the numbers from 1-10 to make the procedure even more objective, e.g. 1 = more than €100,000, 2 €90,000 to €100,000, ... 10 = less than €10,000). When a proposed solution is evaluated with a criterion, it is multiplied by the weighting factor of the criterion and entered in the corresponding cell of the evaluation grid. If one has evaluated each solution with each criterion, the row sums are formed and one receives a ranking row, in which the most promising solution receives the most points.

References

Using grid analysis for idea evaluation: <https://rationalize.io/2021/03/09/using-grid-analysis-for-idea-evaluation/>

5.5.17 Wonder question with master plan

Keywords: Problem solving

Coaching elements: Trust, dialogue

Stage: 5

Brief description

When people are in trance before upcoming changes, development steps, goals, etc., they focus all their energy on the hurdles and keep coming back to "their problem". With solution-oriented questions, not only the target state is visualised, but also the way to get there is concretised through action steps. For this purpose, a scale is used as a timeline and transformed into an action plan. At the end of the coaching session, the person holds e.g. a to-do list, an action plan, a checklist, etc. in their hands, which they can start implementing immediately.

Objectives

The method aims at visualising the desired target state and planning the necessary action steps. It thus creates a solution-oriented framework in which the person can imagine what they want to achieve and what exactly they should do to achieve it.

In a nutshell, the wonder question with master plan produces the following effects:

- Lead from a problem-oriented thinking to a solution-oriented thinking
- Release solution energy and solution imagination
- Activate positive resources
- Plan implementation until the goal is achieved

Requirements

Participants: Minimum 1

Time: 1-2 hours

Online tool: Padlet

Implementation guidelines

If the student experiences their problem as unsolvable, cannot name any exceptions and feels at the mercy, then probably only a "miracle" can help. And that is exactly what the coach asks for. The miracle is visualised at the beginning of the session and uses an as-if frame to emotionally move the student there, i.e. to a future goal state.

The coach introduces a scale on which 10 represents the miracle (the target state). On the scale, the student enters their self-assessment as a starting point. The student then first elaborates on how they would perceive the change, what would be different, how it would feel, etc. Again and again, the student's attention is drawn to the perception of their own resources for coping.

In the following, the individual application steps are presented with suggestions for formulations and solution-oriented questions of the coach. At the beginning there is the student's description of the concern, in which a strong problem orientation becomes clear. Eight steps follow.

Step 1: Problem exploration

The coach picks up the problem and has the student describe exactly what it is. Through backtracking and follow-up questions, the coach makes sure that they understand the problem in the best possible way. The coach asks many comprehension questions and has the student assure them that they have now learned everything that is important for understanding and thus the problem does not need to be discussed in further detail.

Step 2: Induction of the miracle question trance

The coach awakens the student attention and asks: "I'd like to invite you to do a little fantasy journey/thought experiment: Imagine you go home after our coaching, do what needs to be done, and go to bed. And then a fairy godmother comes to you at night and makes a miracle happen. All your problems are solved and you have reached your goal. In the morning, when you wake up, you do not remember that the fairy was there. You simply start your day. Yes, miracles just happen. So, we are not going to explore here why it happened, we are just interested in the miracle itself and how it shows up in everyday life."

Step 3: Resource activation

The coach asks open-ended, systemic questions to reinforce the student's experience of the target state:

"How will you know your miracle has come true?"

"What will be different?"

"Who around you would first recognise that the miracle has happened?"

"How do you feel when your miracle has come true?"

"How do you perceive yourself in this situation?"

"What do others say about you now that you have achieved your goal?"

Step 4: Visualisation of the scale

The coach gently builds a bridge back to the here and now by drawing a scale (ideally on a flip chart) and explaining it, "I am going to draw you a scale here. Your miracle is at 10."

Step 5: Mobilisation of the student

Still remaining in the storytelling of the trance, but locating themselves in the now, the coach invites the student to stand up to locate themselves on the scale. By literally getting the student moving, their activity is stimulated and they can more easily overcome the blocking feeling of the problem trance. The coach asks the student, "Where were you before your miracle happened?" The student draws themselves in the scale, makes a cross or enters a number - it is up to them.

Step 6: Review and outlook

Coach: "Now I would like to explore with you how you managed to get to a 10 and make your miracle come true. To do this, let us look at the individual stations on your path to the miracle." This is followed by questions such as:

"How did you do it?"

"What exactly did you do?"

"What did you have to do, clarify, cancel, etc. beforehand?"

"What necessary steps did you take?"

"What came afterwards?"

"When you look at the scale like this, what else is there to add? What else?"

The student attaches a post-it to the scale for each intermediate step, stage, success, etc. Here it is very helpful if the coach repeatedly summarises (without judgmental comments), asks specific questions about individual steps, and lets the student tell the story. Talking about the development makes the process more realistic, encourages the student to think through further steps, to make connections and to allow associations that benefit the action planning.

Step 7: Appreciation and renewed resource activation

Given the (anticipated) number of individual steps necessary to achieve the goal, the coach should once again invite the student to become aware of their self-efficacy, implementation energy, and resourcefulness. The coach activates the fantastic frame: "Let us stay a little longer in the image of the miracle that has come true here."

Resource activating questions (self-efficacy):

"What brought you joy?"

"What behaviour has helped you?"

"Which of your qualities was clearly demonstrated here once again?"

"What were your strengths here?"

"What would a person who knows you particularly well say about you here?"

"What skills do you have to achieve the goal?"

Resource activating questions (external resources)

"Who or what gave you strength to keep going?"

"What external support do you get? Who can you count on?"

"What additional skills do you need to activate to achieve your goal?"

From this, further action steps can also be derived, which are also located on the scale.

Step 8: Appreciation and transition to transfer

Coach: "I would like to thank you for your openness to this thought experiment. You have engaged in visualising a miracle and have worked out a very concrete master plan about it, in which you have already defined clear action steps, etc."

Transfer planning questions:

"How do you plan to address the issue?"

"What is the next meaningful step?"

"What do you need on your way to your goal?"

Based on the question of what the student has done in detail to realise their miracle, the individual steps are planned along the scale using post-its or cards. The online tool is thus strongly practice-

oriented and action-oriented due to the concrete implementation planning and enables the transfer of the coaching into the professional or private life of the student. By recording the individual stages leading up to the miracle, it becomes demystified and tangible. It is henceforth perceived by the student as attainable.

Reference

Wunderfrage mit Masterplan (Wonder question with master plan): <https://www.coaching-magazin.de/coaching-tools/tools/wunderfrage-mit-masterplan>

5.5.18 Appreciations exercise

Keywords: Motivation, self-confidence

Elements: Trust, dialogue

Stage: 2, 3, 4, 5

Brief description

At a good learning event, participants give their best and often show more of themselves than usual. This gives everyone a good insight into each other's strengths. Hearing about your strengths from others and acknowledging them to yourself increase your motivation and confidence. If you do this at the end of a workshop, you will go home feeling good about yourself and also about your colleagues.

Objective

Building student's motivation and self-confidence.

Requirements

Participants: 6-12

Time: 10-20 minutes

Online tool: Mural

Implementation guidelines

The key is to be able to temporarily hide the appreciative comments people write.

In Mural's case, it does not allow you to change the font colour on post-it notes, but you can do this when using a text box.

1. So as a starting point you create text boxes with a yellow background and black font.

2. Every participant is going to write an appreciative comment, as many yellow text boxes, as many people they write to.
3. When they are done with an appreciate comment (text box), they change both the post it backgrounds and the font colour to another colour (e.g. orange) and then move it to the big white box of the person, where their appreciations are collected (This way the text stays hidden, and the orange background indicates that it is not an empty text box).
4. After everyone is done, and everyone's appreciation area (you set up a big rectangular space for each participant) is filled with orange coloured text boxes, turn the font colour on those orange boxes into black within your box, and read the comments.

Reference

Appreciations exercise (SessionLab): <https://www.sessionlab.com/methods/appreciations-exercise>

5.5.19 Brief solution focus

Keywords: Problem-solving

Coaching elements: Trust, dialogue, ownership

Stage: 5

Brief description

This model focuses on the solution rather than the problem, and can be used in a coaching session when time is precious.

Objectives

Supporting the person who is “stuck” to see beyond the problem to the solution, which can give them a fresh perspective on their situation.

Requirements

Participants: Minimum 1

Time: 10-15 minutes

Online tool: Any synchronous online communication channel (e.g. Microsoft Teams, Zoom)

Implementation guidelines

Start the conversation by building rapport with your student and ask questions like:

"What brings us to talking about this today?"

"Why now?"

These can help to lead into an explanation.

1. Move to the solution state - Ask questions like:

"What would you like instead of what you have now?"

"What do you want to change?"

"What have you tried and what has worked?"

2. Experience the difference

This stage enables both you and your colleague to see a time in the future without the problem. Examples of the questions at this stage are:

"I am wondering what your life will be like without this problem?"

"Can you describe to me how things will be different when this problem is sorted out?"

3. Find a path to the solution, backwards

"What would you do to get to this solution?"

"Think of a time when you were not so disorganised, what did you do differently?"

"How would someone else do it?"

Reference

What is solution-focused therapy?: <https://solutionfocused.net/what-is-solution-focused-therapy/>

5.5.20 Ikigai

Keywords: Career coaching, motivation

Coaching elements: Ownership

Stage: 5

Brief description

The term "Ikigai" comes from Japanese and denotes an attitude towards life. It translates roughly as "that which is worth living for," "joy and purpose in life," or "something worth getting up for in the morning." This online tool is suitable for questions about self-realisation and meaning of our life. The questions in the online tool comprehensively illuminate the coachee's life situation.

Ikigai is seen as the convergence of four basic elements:

- What you *love* (your passion and mission)
- What the *world needs* (your mission and vocation)

- What you are *good at* (your passion and profession)
- What you can *get paid* for (your profession and vocation)

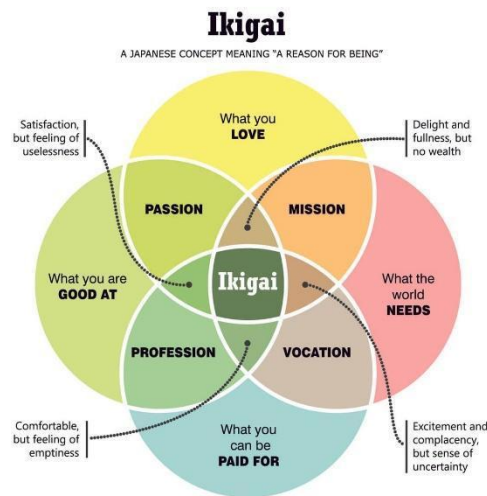


Figure 22: Ikigai (adapted from studygram.me, n.d.)

Possible areas of application could be:

- Assessment and diagnostic Online tool at the beginning of a coaching session
- Re-orientation, situations of upheaval
- Search for new perspectives in life
- Development of potential and holistic goal setting

Objectives

- Visualisation of own passions, strengths, resources, values
 - Visualisation of the student's life situation
 - Revealing areas that are perceived as "deficient" or "neglected"
 - Signposting for the next steps
-

Requirements

Participants: Minimum 1

Time: At least 90 minutes

Material: Online whiteboard (e.g. Mural)

Implementation guidelines

1. Status analysis

The four segments (four coloured circles) are filled by the student by asking questions one by one. The order is basically irrelevant, starting what is easiest for the person. The following examples of questions can be used to work out the individual areas:

Red: What do you love?

“What excites you?”

“What can you do endlessly without getting tired?”

“If you could do what you love most all day, what would you do?”

“What could you talk about for hours?”

“How do you like to spend your vacation?”

“When do you forget everything around you / are you in the flow?”

Yellow: What are you good at?

“What talents do you have?”

“What can you do better than others?”

“What unusual skills do you have?”

“Do you have any special hobbies?”

“What have you learned? Where are you a specialist? Which education, study, further education?”

Green: What do you get paid for?

“What is your profession?”

“Where does your income come from?”

“What is missing?”

Blue: What does the world need from you?

“What are your values and what corresponds to them?”

“In what do you see a sense, what fulfils you?”

“Where do you see your greatest benefit?”

“What would immediately stand out if you were not there for a few weeks?”

“What would be left undone / not done?”

“Where or who would you specifically be missing?”

2. Finding overlaps

The visualisation makes overlaps clear – the coachee (student) can also write things on the edge of the online post-its on the boundaries between two areas. One can colour-circle commonalities in the individual areas, so a tendency becomes recognisable. Sometimes a particularity already shows up here, which can give a hint to an "Ikigai".

3. Results

Working with the model is fluid. It develops gradually. Sometimes the coachee still needs time, so questions cannot be answered right away. Or there are limitations that still stand in the way and are a starting point for further work with the coachee. The model can also be used in the long term, the coachee receives a kind of homework in everyday life to pay attention to what he likes to do, to discover talents, to query talents and gifts also with third parties. The coachee could even do this with a kind of diary.

Reference:

The philosophy of Ikigai: 3 examples about finding purpose: <https://positivepsychology.com/ikigai>

5.5.21 Personal SWOT

Keywords: Career guidance, reflection

Coaching elements: Ownership

Stage: 5

Brief description

In business, SWOT analysis reveals an organisation's strengths and weaknesses, as well as the opportunities and threats it faces. Just as this is useful for organisations, it is also very effective for individuals to analyse their own situation. When you know your strengths, you can focus your efforts on the things you are good at, and when you know your weaknesses, you know what to avoid and improve, and where to get help from people who can do those things better.

Objectives

This powerful process helps understand what makes the individual unique. Identify the strengths and weaknesses, as well as the opportunities and threats. Use the results to highlight the unique skills, strengths and talents and plan strategies to deal with the weaknesses and threats.

Requirements

Participants: minimum 1

Time: about 60 min.

Material: Online whiteboard (e.g. Mural)

Implementation guidelines

SWOT analysis is a way of looking at your situation by identifying:

- **Strengths**, i.e., the areas where you have an advantage over others or can leverage unique resources
- **Weaknesses**, i.e., areas where you are weaker than others and where you find that others can do better than you
- **Opportunities** that you can take advantage of to achieve your goals and ambitions
- **Threats**, i.e., things that could prevent you from making gains or achieving your goals.

1. Strengths

This is about finding out what makes you different from most other people. What do you and others see as the qualities that set you apart? When thinking about strengths, it is important not to limit yourself to job skills; all of the experiences the coachee has had are important. These include education, talents, personality factors, and interests. The following questions will help identify strengths:

“What are you really good at?”

“What skills do other people recognise in you?”

“What do you do better than most people you work with?”

“What do you get recognised or rewarded for?”

“What, about yourself, are you most proud of or satisfied with?”

“What experiences, resources or connections do you have access to that others do not?”

2. Weaknesses

The second step is to identify the weaknesses. A personal weakness is a liability or an area for growth. These are characteristics the coachee could improve to increase future job opportunities. To complete the weaknesses section, use the following questions as a guide:

“What do you try to do that you just can’t seem to master?”

“Are there one or two aspects of your personality that hold you back?”

“What do other people most often identify as a weakness for you?”

“Where do you lack experience, resources or connections where others have them?”

3. Opportunities

Positive and external chances which are available to help and prove yourself for reaching the goals. This is best done by setting aside some time and brainstorming in an attempt to uncover new and innovative ideas that may not have occurred to the coachee before. Possible questions could be:

“In what ways can you maximise your strengths?”

“What opportunities are open to those who do these things well?”

“What would you love to do that you are good at?”

“Where do you see the most potential growth for yourself?”

4. Threats

External and harmful factors that could have a negative impact on ourselves. Finally, the coachee analyses the things that can affect their success. The more you know about them, the less likely you are to be "blindsided" by something unexpected. The following types of questions help uncover potential threats:

"Do you have weaknesses that need to be addressed before you can move forward?"

"What problems could your weaknesses cause if left unchecked?"

"What setbacks might you face?"

"What obstacles have other people overcome when they are trying to get to where you want to go?"

Reference

Personal SWOT analysis: Knowing where you are, and where to go: <https://xmind.app/blog/personal-swot-analysis-knowing-where-you-are-and-where-to-go/>

6 Digital tools and applications to support e-coaching

In this chapter, we will introduce the most relevant online tools and applications that support e-coaching in education. Relevant in the e-coaching process are digital tools and applications that support communication, presenting, collaboration, learning management, project management as well as surveying and gamification.

6.1 Digital communication tools and applications

Digital communication tools and applications refer to the various software and platforms used to connect people and enable communication over the internet. These tools have revolutionised the way we communicate, making it faster, more efficient, and more convenient. Some of the most relevant digital communication tools and applications related to our e-coaching framework are described below.

6.1.1 Zoom

Zoom is a video conferencing platform that allows users to host and participate in virtual meetings, webinars, and video conferences. It was developed by Zoom Video Communications, Inc. and was first launched in 2013. Zoom's features include video and audio conferencing, screen sharing, virtual backgrounds, chat, and recording. It also has features like breakout rooms, which allow hosts to divide participants into smaller groups for discussions or activities, and a waiting room feature that allows the host to control who enters the meeting. Some of the main features of Zoom include:

1. **Video conferencing:** Zoom offers high-quality video and audio conferencing for meetings and webinars, with features such as screen sharing, recording, and virtual backgrounds.
2. **Chat and messaging:** Zoom has a chat feature that allows users to send messages, emojis, and files during meetings or outside of meetings.
3. **Screen sharing:** Users can share their screens with others during meetings, making it easy to collaborate and present information.

4. **Breakout rooms:** Zoom offers breakout rooms, which allow hosts to split participants into smaller groups for more focused discussions or activities.
5. **Integration:** Zoom can be integrated with other apps and services, such as Google Drive, Dropbox, and Outlook.
6. **Remote control:** Users can grant remote control to another participant, enabling them to control the presenter's screen or share their own screen.
7. **Recording:** Zoom allows users to record their meetings and webinars for future reference or to share with others who couldn't attend.

Table 5 gives an overview on target group, functionalities, technical requirements and cost.

Table 5: Overview Zoom

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> • Video and audio-conferencing • Screen sharing • Breakout rooms • Recording and playback • Virtual backgrounds and filters • Webinars and events
Requirements	<ul style="list-style-type: none"> • Operating system: Windows, macOS, Linux, iOS, Android • Internet connection: stable internet connection; minimum internet speed of 1.5 Mbps for both upload and download • Processor: processor with at least 2 cores and a minimum of 4GB of RAM for optimal performance • Camera (webcam) and microphone • Browser: Google Chrome, Mozilla Firefox, Safari (most recent versions) • Zoom App: Zoom desktop or mobile app (most recent versions)
License / Cost	<ul style="list-style-type: none"> • Zoom Basic: free (40 minutes time limit / up to 100 participants) • Zoom Pro: €12.99/month (no time limit / up to 100 participants) • Zoom Business: €16.99/month (minimum of 10 hosts / up to 300 participants) • Zoom Enterprise: Custom pricing based on organisation needs
Link to Tool	https://zoom.us

Overall, Zoom is a versatile platform that enables remote collaboration and communication, making it a popular choice for virtual meetings and events.

6.1.2 Microsoft Teams

Microsoft Teams is a collaboration and communication platform developed by Microsoft as part of the Microsoft 365 suite of productivity tools. It is designed to bring people, conversations, and content together in one place, making it easier for teams to collaborate and work together, whether they are

in the same location or working remotely. With Microsoft Teams, users can create teams for specific projects, departments, or groups, and then add channels within those teams to organise conversations and files around specific topics. It also integrates with other Microsoft 365 apps, such as OneDrive, SharePoint, and Outlook, making it easy to share and collaborate on files, schedule meetings, and send emails from within the platform. Some of the main features of Microsoft Teams include:

1. **Chat and messaging:** Teams allows users to send instant messages and have group conversations in real-time. Users can also share files and collaborate on documents within the chat window.
2. **Video and audio calls:** Teams offers video and audio calling features that allow users to conduct meetings and make voice or video calls with team members, whether they are in the same location or working remotely.
3. **Screen sharing and remote control:** Teams allows users to share their screens or control the screens of others during meetings or presentations.
4. **Collaboration tools:** Teams includes a range of collaboration tools such as document collaboration and co-authoring, whiteboarding, and integration with other Microsoft 365 apps like OneNote, SharePoint, and OneDrive.
5. **Customisable channels:** Teams allows users to create channels for different teams or projects, which can be customised with unique names and descriptions.
6. **Security and compliance:** Teams has built-in security and compliance features, including data encryption, multi-factor authentication, and compliance with various regulatory standards.
7. **Third-party app integration:** Teams allows integration with third-party apps and services, including Trello, Zoom, and more.

Table 6 gives an overview on target group, functionalities, technical requirements and cost.

Table 6: Overview Microsoft Teams

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> • Meetings • Chat and messaging • Video and audio calls • Screen sharing and remote control • Customisable channels • Collaboration tools • Security and compliance • Third-party app integration • Mobile app
Requirements	<p>Windows:</p> <ul style="list-style-type: none"> • Operating System: Windows 10 or later • Processor: 1.6 GHz or faster, 2-core • RAM: 4 GB or higher • Hard disk space: 4 GB of available disk space • Display: 1024 x 768 screen resolution <p>macOS:</p>

	<ul style="list-style-type: none"> • Operating System: macOS X Yosemite 10.10 or later • Processor: Intel processor • RAM: 4 GB or higher • Hard disk space: 4 GB of available disk space • Display: 1280 x 800 screen resolution <p>iOS:</p> <ul style="list-style-type: none"> • Operating System: iOS 12.0 or later • Processor: ARM-based • RAM: 2 GB or higher • Hard disk space: N/A • Display: N/A <p>Android:</p> <ul style="list-style-type: none"> • Operating System: Android 4.4 or later • Processor: ARM-based • RAM: 2 GB or higher
License / Cost	<ul style="list-style-type: none"> • Free version (Chat and messaging, audio and video calls, 2 GB of storage per user and 10 GB of shared storage, integration with other Microsoft apps like OneNote, Word, and Excel, ability to collaborate on files within Teams) • Paid Versions: <ul style="list-style-type: none"> ○ Microsoft Teams Essential (€3.70 /user and month) ○ Microsoft 365 Business Basic (€5.60/user and month) ○ Microsoft 365 Business Standard (€11.70/user and month)
Link to Tool	https://www.microsoft.com

Overall, Microsoft Teams is a collaboration and communication platform that allows users to chat, make audio and video calls, hold virtual meetings, collaborate on files, and integrate with other Microsoft 365 apps and third-party services.

6.1.3 BigBlueButton

BigBlueButton is an open-source web conferencing system designed for online learning and virtual classrooms. It provides a range of features such as real-time audio and video conferencing, screen sharing, presentation sharing, chat functionality, and recording capabilities. BigBlueButton also supports various interactive features such as polling, breakout rooms, whiteboard, and document sharing, making it an effective platform for online learning and collaboration. Some of the main features of BigBlueButton include:

1. **Presentation sharing:** Users can share presentations, PDFs, and other documents with participants during meetings.
2. **Interactive whiteboard:** BigBlueButton has an interactive whiteboard feature that allows users to draw and annotate on a shared canvas.
3. **Record and playback:** Users can record their meetings and presentations for later playback or sharing with others.

4. **Integration:** BigBlueButton can be integrated with learning management systems such as Moodle, allowing for seamless integration with existing online courses.
5. **Mobile support:** BigBlueButton has a mobile app that allows users to join meetings and participate in discussions from their mobile devices.

Table 7 gives an overview on target group, functionalities, technical requirements and cost.

Table 7: Overview BigBlueButton

Target group	Educators, students
Main functionalities	<ul style="list-style-type: none"> ● Video and audio-conferencing ● Screen sharing ● Whiteboard ● Breakout rooms ● Recording
Requirements	<ul style="list-style-type: none"> ● Operating system: Windows, macOS, Linux ● Internet connection: stable internet connection; minimum internet speed of 1.0 Mbps for both upload and download ● Processor: minimum 2.0 GHz quad-core processor (recommended) ● Microphone and speakers, camera (webcam) optional ● Browser: Google Chrome, Mozilla Firefox, Safari (most recent versions)
License / Cost	<ul style="list-style-type: none"> ● Free to use (no licensing or subscription fees) ● Server-hosting costs ● Maintenance costs
Link to Tool	https://bigbluebutton.org

Overall, BigBlueButton is a platform designed specifically for online learning and collaboration, with features tailored to the needs of educators and students. It is free and open-source, making it an accessible option for individuals and institutions looking to facilitate online learning and collaboration.

6.1.4 Flip

Flip, which was formerly known as Flipgrid, is an educational platform that enables educators and students to create and share short, interactive videos. It was designed to provide a fun and engaging way for students to express themselves and learn through video-based communication. Flip allows educators to create grids, which are online communities where students can share their videos and interact with each other. Educators can customise grids with their own branding and set up topics for students to respond to with videos. Flip can be used in a wide range of educational contexts, from language learning and creative writing to science experiments and social studies. It is also a popular tool for remote learning, enabling students to connect and collaborate with their peers from anywhere in the world. Some of the main features of Flip include:

1. **Video responses:** Flip allows students to record and share short videos in response to topics set by their educators, creating a collaborative and interactive learning environment.

2. **Customisation:** Educators can customise their grids with their own branding and set up topics for students to respond to with videos.
3. **Assessment and feedback:** Flip provides tools for assessment and feedback, such as the ability for educators to grade student responses, and provide feedback through text, audio, or video.
4. **Reactions and filters:** Flip provides a range of interactive features, such as the ability to add emojis, stickers, and filters to videos, and to react to other students' videos.
5. **Accessibility:** Flip provides accessibility features such as captioning and screen reader support to ensure that all students can participate.
6. **Integration:** Flip can be integrated with a range of other educational tools, such as learning management systems, video conferencing platforms, and student information systems.

Table 8 gives an overview on target group, functionalities, technical requirements and cost.

Table 8: Overview Flip

Target group	Educators, students
Main functionalities	<ul style="list-style-type: none"> ● Video responses ● Engagement features ● Moderation tools ● Integration with other tools ● Accessibility features ● Analytics
Requirements	<ul style="list-style-type: none"> ● Operating system: Windows, macOS, iOS, Android ● Internet connection: stable internet connection; minimum internet speed of 1.0 Mbps for both upload and download ● Device: desktop computer, laptop, tablet, smartphone ● Camera and microphone ● Browser: Google Chrome, Mozilla Firefox, Safari (most recent versions)
License / Cost	<ul style="list-style-type: none"> ● Free plan: unlimited number of grids an topics, 1000 video responses per grid) ● Flip Classroom (paid plan, \$65/year): e.g. unlimited video responses per grid
Link to Tool	https://info.flip.com/en-us.html

Overall, Flip is a versatile platform for video-based communication and collaboration in education. Its range of features and customisation options make it a useful tool for educators and students who want to create engaging and interactive video content, while its accessibility features ensure that all students can participate

6.2 Digital presentation tools and applications

Digital presentation tools are software applications that allow you to create and share visual content, such as slideshows, videos, infographics, and animations, to communicate information or ideas. These

tools offer a wide range of features and functionalities that enable users to design, edit, and present their content in a professional and engaging way.

6.2.1 Microsoft PowerPoint

Microsoft PowerPoint is a presentation software developed by Microsoft Corporation. It is part of the Microsoft Office suite of productivity applications and is widely used for creating and delivering presentations in business, education, and other settings. Some of the main features of Microsoft PowerPoint include:

1. **Slides:** PowerPoint is based on slides, which are individual screens that can contain text, images, charts, tables, and multimedia content.
2. **Templates and themes:** PowerPoint offers a wide range of templates and themes to choose from, making it easy to create visually appealing and professional-looking presentations.
3. **Animation:** PowerPoint allows users to add animations and transitions between slides to make their presentations more engaging.
4. **Collaboration:** PowerPoint supports real-time collaboration, allowing multiple users to work on the same presentation simultaneously.
5. **Multimedia support:** PowerPoint allows users to incorporate a wide range of multimedia content into their presentations, including images, videos, and audio files.
6. **Presenter view:** PowerPoint offers a Presenter view, which allows presenters to view their notes, upcoming slides, and a timer while presenting.
7. **Accessibility:** PowerPoint offers accessibility features such as alt text, closed captions, and screen readers to ensure that presentations are accessible to everyone.

Table 9 gives an overview on target group, functionalities, technical requirements and cost.

Table 9: Overview Microsoft PowerPoint

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Slide creation ● Design options ● Animation and transition effects ● Collaboration and sharing ● Presenter tools ● Accessibility features ● Integration with other Microsoft Office tools
Requirements	<ul style="list-style-type: none"> ● Operating System: Windows 10, Windows 8.1, Windows Server 2019, or macOS 10.14 or later ● Processor: 1.6 GHz or faster, 2-core processor ● RAM: 4 GB or more ● Hard disk space: 4 GB or more of available disk space ● Display: 1280 x 768 screen resolution (PC), 1280 x 800 screen resolution (Mac)

	<ul style="list-style-type: none"> • Graphics: DirectX 9 or later, with WDDM 2.0 or higher for Windows 10 • Internet connection: Internet functionality requires an internet connection
License / Cost	<ul style="list-style-type: none"> • Included in Microsoft Office 365 subscription plan (different plans on offer) • Standalone version with one-off payment (different versions on offer)
Link to Tool	https://www.microsoft.com

Overall, Microsoft PowerPoint is a versatile and widely-used presentation tool that offers a range of features to create engaging and professional-looking presentations. Its collaboration, multimedia support, and animation features make it a popular choice for business and academic presentations, while its accessibility features make it a useful tool for creating inclusive presentations.

6.2.2 Google Slides

Google Slides is a cloud-based presentation software developed by Google. It is part of the Google Workspace suite of productivity applications and is designed to allow users to create and collaborate on presentations from anywhere with an internet connection. Google Slides offers many of the same features as traditional presentation software, such as Microsoft PowerPoint. Users can create slide-based presentations that include text, images, charts, graphs, tables, and multimedia content. Google Slides also offers a range of pre-designed templates and themes to choose from, as well as tools for adding animation, transitions, and other effects to slides. One of the main advantages of Google Slides is its collaborative features. Multiple users can work on the same presentation simultaneously, and changes are saved in real-time. Users can leave comments on specific slides or collaborate in real-time using the built-in chat feature. This makes Google Slides a great tool for teams or groups working on a presentation together. Google Slides also integrates seamlessly with other Google Workspace applications, such as Google Drive, Google Docs, and Google Sheets, making it easy to incorporate data or information from other sources into your presentation. Some of the main features of Google Slides include:

1. **Cloud-based:** Google Slides is a cloud-based presentation software, which means that presentations can be created and accessed from anywhere with an internet connection.
2. **Collaborative:** Google Slides allows multiple users to work on the same presentation simultaneously, and changes are saved in real-time.
3. **Templates and themes:** Google Slides offers a wide range of pre-designed templates and themes to choose from, making it easy to create visually appealing and professional-looking presentations.
4. **Multimedia support:** Google Slides allows users to incorporate a wide range of multimedia content into their presentations, including images, videos, and audio files.
5. **Animation:** Google Slides allows users to add animations and transitions between slides to make their presentations more engaging.
6. **Real-time commenting:** Users can leave comments on specific slides, and collaborate in real-time using the built-in chat feature.

7. **Integration with Google Workspace:** Google Slides integrates seamlessly with other Google Workspace applications, such as Google Drive, Google Docs, and Google Sheets, making it easy to incorporate data or information from other sources into your presentation.
8. **Offline access:** Google Slides offers an offline mode, allowing users to access and present their presentations even without an internet connection.

Table 10 gives an overview on target group, functionalities, technical requirements and cost.

Table 10: Overview of Google Slides

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Presentation creation ● Collaboration ● Sharing ● Customisation ● Presenting ● Accessibility
Requirements	<ul style="list-style-type: none"> ● Operating System: All major operating systems, including Windows, macOS, and Linux ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet, mobile device ● Internet connection: stable Internet connection
License / Cost	<ul style="list-style-type: none"> ● Free to use for anyone with a Google account ● Paid plans available for educational institutions and other organisations
Link to Tool	https://www.google.com

Overall, Google Slides is a versatile and collaborative presentation tool that offers a range of features to create engaging and professional-looking presentations. Its cloud-based nature and collaboration features make it a popular choice for remote teams and individuals, while its integration with other Google Workspace applications makes it a useful tool for creating and sharing presentations.

6.2.3 Prezi

Prezi is a cloud-based presentation software that allows users to create and share dynamic and visually engaging presentations. Unlike traditional slide-based presentation software like Microsoft PowerPoint or Google Slides, Prezi uses a canvas-based approach that allows users to zoom in and out of various elements on the canvas, creating a more immersive and interactive experience for the audience. With Prezi, users can create presentations from scratch or use pre-made templates to get started. The software includes a wide range of design tools and features, such as the ability to add images, videos, and audio files, customise fonts and colours, and create animations and transitions. Prezi also includes collaboration tools that allow multiple users to work on a presentation simultaneously, as well as the ability to share presentations online or download them as PDFs. Some of the main features of Prezi include:

1. **Zoomable canvas:** Prezi uses a zoomable canvas instead of slides, allowing users to create dynamic, non-linear presentations that can be explored in any order.
2. **Templates and themes:** Prezi offers a variety of templates and themes that can be customised to match your brand or personal style.
3. **Multimedia support:** Prezi allows users to incorporate a wide range of multimedia content into their presentations, including images, videos, and audio files.
4. **Collaboration:** Prezi supports real-time collaboration, allowing multiple users to work on a presentation simultaneously.
5. **Analytics:** Prezi offers analytics tools that allow users to track how their presentations are being viewed and engaged with.
6. **Mobile support:** Prezi has mobile apps for iOS and Android, allowing users to access and present their presentations from their mobile devices.
7. **Offline access:** Prezi offers an offline mode, allowing users to access and present their presentations even without an internet connection.

Table 11 gives an overview on target group, functionalities, technical requirements and cost.

Table 11: Overview of Prezi

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Canvas-based approach ● Templates and themes ● Multimedia support ● Animations and transitions ● Collaboration tools ● Sharing ● Presenting ● Analytics and tracking
Requirements	<ul style="list-style-type: none"> ● Operating System: All major operating systems, including Windows, macOS, and Linux ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet, mobile device, suitable graphics card, minimum recommended RAM of 4 GB for running Prezi, minimum of 2 GB of free storage space ● Internet connection: stable Internet connection, minimum internet speed of 1.5 Mbps
License / Cost	<ul style="list-style-type: none"> ● Free basic account: Creation and editing presentations, limited storage space and features ● Paid plans available at different prices (Prezi Plus, Prezi Premium, Prezi Business)
Link to Tool	https://prezi.com

Overall, Prezi is a versatile and dynamic presentation tool that offers a unique approach to presenting information. Its zoomable canvas and multimedia support make it a great choice for engaging and interactive presentations, while its collaboration and analytics features make it a useful tool for teams and organisations.

6.2.4 Canva

Canva is a graphic design and visual content creation tool that allows users to create a wide range of designs, including presentations, social media graphics, flyers, posters, invitations, and more. It was founded in 2012 and has become a popular choice for individuals and businesses looking to create professional-looking designs without the need for advanced design skills or software. Canva offers a drag-and-drop interface, which makes it easy to create designs using pre-designed templates and layouts. It also offers a wide range of design elements, such as graphics, icons, photos, and fonts that can be easily customised and incorporated into your design. Some of the main features of Canva include:

1. **Templates and layouts:** Canva offers a wide range of pre-designed templates and layouts that can be easily customised to suit your needs. These templates are available for various design types, including social media graphics, presentations, posters, flyers, and more.
2. **Design elements:** Canva offers a vast library of design elements, including graphics, icons, photos, and fonts that can be easily incorporated into your design. Some of these elements are free, while others are available with Canva's paid version.
3. **Customisable options:** Canva allows users to customise their designs with a wide range of options, including colour schemes, font styles, and sizes, image filters, and more.
4. **Collaboration:** Canva's paid version allows for team collaboration, which is useful for businesses and organisations with multiple team members working on a design project.
5. **Brand management:** Canva's paid version also allows for brand management, which enables users to create a consistent brand identity across all their designs.
6. **Ease of use:** Canva's drag-and-drop interface makes it easy to create designs even for those without advanced design skills.
7. **Mobile pp:** Canva offers a mobile app for iOS and Android devices, allowing users to create and edit designs on-the-go.

Table 12 gives an overview on target group, functionalities, technical requirements and cost.

Table 12: Overview of Canva

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Templates ● Design tools ● Collaboration ● Branding ● Publishing
Requirements	<ul style="list-style-type: none"> ● Operating System: All major operating systems, including Windows, macOS, and Linux

	<ul style="list-style-type: none"> • Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge • Hardware: No specific requirements, computer or laptop with at least 4 GB RAM and a dual-core processor recommended • Internet connection: stable Internet connection with a speed of at least 2 Mbps • Screen resolution: Optimised for a minimum screen resolution of 1024 x 768 pixels, higher resolution recommended for a better user experience
License / Cost	<ul style="list-style-type: none"> • Free version: Access to a limited set of design tools, templates, and images • Canva Pro and Canva Enterprise: Paid versions which provide access to all of Canva's features, including premium templates, images, and design tools
Link to Tool	https://www.canva.com

Overall, Canva is a user-friendly and versatile design tool that offers a wide range of features and elements to create professional-looking designs. Its popularity and ease of use have made it a popular choice for individuals, businesses, and organizations of all sizes.

6.2.5 Emaze

Emaze is a cloud-based presentation software that allows users to create dynamic and engaging presentations, websites, e-cards, and other visual content. Emaze was founded in 2012 and is based in Israel. Emaze offers a wide range of templates, themes, and design elements, which users can customise to create their presentations. The platform features a user-friendly drag-and-drop interface, which makes it easy for users to create and edit their presentations. Emaze also includes features such as animations, transitions, and multimedia elements, such as videos and audio files. These features can be used to create interactive and engaging presentations. Emaze also offers collaboration features, which allow users to work on a presentation with other team members in real-time. In addition to presentations, Emaze allows users to create websites and e-cards. This makes it a versatile platform that can be used for a variety of visual content creation purposes. Some of the main features of Emaze include:

1. **Templates and themes:** Emaze offers a wide range of templates and themes that can be easily customised to suit your needs. These templates are available for various design types, including presentations, websites, and e-cards.
2. **Design elements:** Emaze has a vast library of design elements, including graphics, icons, photos, and fonts that can be easily incorporated into your presentation. Some of these elements are free, while others are available with Emaze's paid version.
3. **Customisable options:** Emaze allows users to customise their presentations with a wide range of options, including colour schemes, font styles and sizes, image filters, and more.
4. **Multimedia elements:** Emaze supports a range of multimedia elements, including videos, audio files, and animations, which can be used to create engaging and interactive presentations.

5. **Collaboration:** Emaze's paid version allows for team collaboration, which is useful for businesses and organisations with multiple team members working on a presentation project.
6. **Analytics:** Emaze provides analytics and insights to help users understand how their presentation is performing, including the number of views, engagement rates, and more.
7. **Ease of use:** Emaze's drag-and-drop interface makes it easy to create presentations even for those without advanced design skills.

Table 13 gives an overview on target group, functionalities, technical requirements and cost.

Table 13: Overview of Emaze

Target group	Educators, students, administrators, online learning platforms
Main functionalities	<ul style="list-style-type: none"> ● Templates ● Multimedia integration ● Collaboration ● Analytics ● Sharing ● Mobile compatibility
Requirements	<ul style="list-style-type: none"> ● Operating System: All major operating systems, including Windows, macOS, and Linux ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: No specific requirements, computer or laptop with at least 4 GB RAM and a decent graphics card recommended ● Internet connection: stable and high-speed Internet connection ● Mobile devices: Available as a mobile app for iOS (iOS 11.0 or later) and Android device (Android 6.0 or later)
License / Cost	<ul style="list-style-type: none"> ● Free plan: Creating and sharing unlimited presentations, access to basic templates, and basic support. ● Basic Plan, Pro Plan, Business Plan as paid plans (prices depend on features and subscription period): Additional features, such as premium templates, advanced analytics, branding and customisation options, and collaboration tools
Link to Tool	https://www.emaze.com

Overall, Emaze is a user-friendly and versatile presentation software that offers a range of design features and customisation options to create dynamic and engaging presentations, websites, and e-cards.

6.3 Digital collaboration tools and applications

Digital collaboration tools are software platforms that enable people to work together on projects or tasks in a virtual environment. These tools facilitate collaboration, communication, and productivity, making it easier for team members to work together regardless of their physical location.

6.3.1 Conceptboard

Conceptboard is a digital whiteboard and collaboration platform that allows teams to collaborate on projects and visual ideas in real-time. It provides a virtual workspace where team members can share ideas, create and edit content, and collaborate on projects from anywhere in the world. Conceptboard is designed to be user-friendly and intuitive, allowing users to easily create and edit content using a range of tools and features. It includes a variety of features such as drawing tools, image and video embedding, and commenting, which allow team members to collaborate in real-time. One of the strengths of Conceptboard is its ability to integrate with other project management tools, such as Trello and Asana, allowing teams to seamlessly manage their projects and workflows. Overall, Conceptboard is a powerful collaboration tool that is particularly well-suited for remote teams working on creative projects. It provides a flexible and intuitive platform for teams to work together and share ideas, no matter where they are located. Conceptboard has a variety of features that make it a popular tool for collaboration and project management. Some of the main features of Conceptboard include:

1. **Digital whiteboard:** Conceptboard provides a digital whiteboard that can be used to create and edit content in real-time.
2. **Collaboration tools:** Conceptboard includes a range of collaboration tools, such as drawing tools, text editing, and commenting, that allow team members to work together on projects.
3. **Integration:** Conceptboard can be integrated with other project management tools, such as Trello and Asana, to streamline project workflows.
4. **File sharing:** Conceptboard allows users to easily share files, such as images, videos, and documents, with other team members.
5. **Real-time communication:** Conceptboard includes real-time communication tools, such as video and audio chat, that allow team members to communicate and collaborate in real-time.
6. **Mobile-friendly:** Conceptboard is designed to be mobile-friendly and can be accessed from a variety of devices, including smartphones and tablets.
7. **Security and privacy:** Conceptboard includes robust security features to protect sensitive information and ensure privacy, such as SSL encryption and two-factor authentication.

Table 14 gives an overview on target group, functionalities, technical requirements and cost.

Table 14: Overview of Conceptboard

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none">● Online whiteboard● Real-time collaboration● Commenting and feedback● Project management● Integrations with other tools
Requirements	<ul style="list-style-type: none">● Operating System: All major operating systems, including Windows, macOS, and Linux● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge

	<ul style="list-style-type: none"> • Hardware: No specific requirements, desktop computer, laptop, tablet and smartphone • Internet connection: stable and high-speed Internet connection • Screen resolution: Optimised for a minimum screen resolution of 1024 x 768 pixels, higher resolution recommended for a better user experience
License / Cost	<ul style="list-style-type: none"> • Free plan: Working on three boards with limited functionalities • Professional Plan, Team Plan, Enterprise Plan as paid plans (prices depend on features and subscription period): Working on unlimited boards, advanced functionalities, and integrations
Link to Tool	https://conceptboard.com

Overall, Conceptboard is a versatile and user-friendly collaboration tool that provides a wide range of features for managing projects and collaborating with team members. It is particularly well-suited for remote teams and projects that require real-time collaboration and visual communication.

6.3.2 Etherpad

Etherpad is an open-source collaborative real-time text editor, designed to enable teams to work together on written documents in real-time. It allows multiple users to edit the same document simultaneously, and to see changes made by other users in real-time. Etherpad provides a range of features to support collaborative writing, including the ability to track changes, chat with other users, and save revisions. It also provides basic formatting options, such as the ability to create headings, lists, and tables. Etherpad is particularly useful for remote teams or distributed teams who need to collaborate on written documents, such as proposals, reports, and articles. It can be used by teams in a wide range of industries, including journalism, academia, and software development. Etherpad is open-source, which means that its source code is freely available for anyone to use and modify. This has led to the development of a range of Etherpad-based tools and services, including hosting services, plugins, and integrations with other software tools. Some of the main features of Etherpad include:

1. **Real-time collaboration:** Etherpad allows multiple users to work on the same document simultaneously, with changes made by one user visible to others in real-time.
2. **Chat:** Etherpad provides a chat feature that allows users to communicate with each other in real-time while working on the same document.
3. **Revision history:** Etherpad automatically saves revisions of a document, allowing users to track changes and revert to previous versions if needed.
4. **Formatting options:** Etherpad offers basic formatting options, such as the ability to create headings, lists, and tables.
5. **Import/export:** Etherpad allows users to import and export documents in a range of formats, including HTML, PDF, and plain text.
6. **Customisation:** Etherpad is open-source, which means that it can be customised and extended using plugins and other tools.

Table 15 gives an overview on target group, functionalities, technical requirements and cost.

Table 15: Overview of Etherpad

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Real-time collaboration ● Version control ● Formatting options ● Exporting and importing ● Customisation
Requirements	<ul style="list-style-type: none"> ● Operating System: All major operating systems, including Windows, macOS, and Linux ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: No specific requirements, desktop computer, laptop, tablet and smartphone ● Internet connection: stable and high-speed Internet connection ● JavaScript enabled: Etherpad requires JavaScript to be enabled in the user's web browser in order to function properly
License / Cost	<ul style="list-style-type: none"> ● Free open-source software ● Paid plans available
Link to Tool	https://etherpad.org

Overall, Etherpad is a simple but powerful tool for collaborative writing and editing. Its real-time collaboration features, revision history, and chat functionality make it a useful tool for remote teams or distributed teams who need to collaborate on written documents. Its open-source nature also makes it a flexible and customisable tool that can be adapted to suit different needs and preferences.

6.3.3 Miro

Miro is a cloud-based digital collaboration tool that allows teams to work together visually in real-time. It offers a digital whiteboard where team members can collaborate on projects, share ideas, and track progress. Miro is designed to help teams work together remotely and is particularly useful for distributed teams or those working in remote locations. It allows teams to work together in real-time, regardless of their location, and enables them to collaborate visually on projects, share ideas, and track progress. Miro offers a range of features that enable teams to collaborate visually in real-time, including a digital whiteboard, sticky notes, drawing and sketching tools, multimedia support, and more. It also offers a range of templates and pre-built frameworks to help teams get started quickly. Miro is used by teams of all sizes, from start-ups to large enterprises, and across a range of industries, including design, marketing, product development, and education. Miro offers a variety of features that allow teams to work together visually in real-time. Some of the main features of Miro include:

1. **Digital whiteboard:** Miro provides a digital canvas that allows teams to collaborate visually on projects, share ideas, and track progress.
2. **Templates and frameworks:** Miro offers a range of templates and pre-built frameworks that cover a wide range of use cases, including design thinking, agile development, project management, and more.

3. **Sticky notes and text boxes:** Miro provides digital sticky notes and text boxes that teams can use to capture and organise ideas.
4. **Drawing and sketching tools:** Miro includes a range of drawing and sketching tools that enable teams to create diagrams, mind maps, and other visual content.
5. **Multimedia support:** Miro allows teams to embed images, videos, and other multimedia content into their projects.
6. **Collaboration and communication:** Miro enables teams to collaborate in real-time and includes features like comments, @mentions, and notifications to keep everyone on the same page.
7. **Integrations:** Miro integrates with a range of other tools, including Slack, Microsoft Teams, and more, to enable seamless collaboration across different platforms.
8. **Security and compliance:** Miro is built with security and compliance in mind and includes features like end-to-end encryption, two-factor authentication, and data retention controls to ensure that your data is safe and secure.
9. **Voting and prioritisation:** Miro includes features like voting and prioritisation that enable teams to quickly gather feedback and make decisions.
10. **Customisable workflows:** Miro allows teams to create customised workflows that fit their unique needs and processes.

Table 16 gives an overview on target group, functionalities, technical requirements and cost.

Table 16: Overview of Miro

Target group	Educators, students, researchers
Main functionalities	<ul style="list-style-type: none"> ● Digital whiteboard ● Collaboration tools ● Templates and frameworks ● Integrations with other tools ● Project management ● Analytics and reporting
Requirements	<ul style="list-style-type: none"> ● Operating System: All major operating systems, including Windows, macOS, and Linux ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: No specific requirements, desktop computer, laptop, tablet and smartphone, 4 GB RAM or higher, Dual core 2.0 GHz or higher ● Internet connection: stable and high-speed Internet connection ● Screen resolution: 1280 x 768 or higher
License / Cost	<ul style="list-style-type: none"> ● Free plan: Working on up to five boards, unlimited team members, and basic collaboration features ● Team, Business, Consultant and Enterprise as paid plans (prices differ based on options): working on unlimited boards, advanced collaboration features, and integration with other apps

Link to Tool	https://miro.com
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Overall, Miro is a comprehensive digital collaboration tool that offers a range of features to help teams work together visually and efficiently.

6.3.4 Mural

Mural is a digital collaboration tool that allows teams to collaborate visually in real-time. It is a cloud-based platform that offers a digital whiteboard where team members can create and collaborate on diagrams, mind maps, user journeys, and other visual content. Mural is designed to help teams work together remotely and is particularly useful for distributed teams or those working in remote locations. It allows teams to work together in real-time, regardless of their location, and enables them to collaborate visually on projects, share ideas, and track progress. Mural also offers a range of templates and pre-built frameworks to help teams get started quickly. These templates cover a wide range of use cases, including design thinking, agile development, project management, and more. Mural offers a range of features that enable teams to collaborate visually in real-time. Some of the main features of Mural include:

1. **Digital whiteboard:** Mural provides a digital canvas that allows teams to collaborate visually on projects, share ideas, and track progress.
2. **Templates and frameworks:** Mural offers a range of templates and pre-built frameworks that cover a wide range of use cases, including design thinking, agile development, project management, and more.
3. **Sticky notes and text boxes:** Mural provides digital sticky notes and text boxes that teams can use to capture and organise ideas.
4. **Drawing and sketching tools:** Mural includes a range of drawing and sketching tools that enable teams to create diagrams, mind maps, and other visual content.
5. **Multimedia support:** Mural allows teams to embed images, videos, and other multimedia content into their projects.
6. **Collaboration and communication:** Mural enables teams to collaborate in real-time and includes features like comments, @mentions, and notifications to keep everyone on the same page.
7. **Integrations:** Mural integrates with a range of other tools, including Slack, Microsoft Teams, and more, to enable seamless collaboration across different platforms.
8. **Security and compliance:** Mural is built with security and compliance in mind and includes features like end-to-end encryption, two-factor authentication, and data retention controls to ensure that your data is safe and secure.

Table 17 gives an overview on target group, functionalities, technical requirements and cost.

Table 17: Overview of Mural

Target group	Educators, students, researchers
Main functionalities	<ul style="list-style-type: none"> ● Visual collaboration ● Remote collaboration

	<ul style="list-style-type: none"> ● Design thinking ● Agile methodologies ● Project management ● Integrations with other tools ● Customisation ● Accessibility
Requirements	<ul style="list-style-type: none"> ● Operating System: All major operating systems, including Windows, macOS, and Linux ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Optimised for desktop and laptop computers ● Internet connection: stable and high-speed Internet connection ● Mobile apps: Available as mobile apps for iOS (iOS 13.0 or later) and Android (Android 5.0 or later) devices
License / Cost	<ul style="list-style-type: none"> ● Free plan: Limited access to templates and integrations, working on up to three editable murals, and one active mural at a time ● Starter plan, Plus plan, Pro plan as paid plans (prices differ based on options): working on more active murals than in the free plan up to working on unlimited active murals, advanced integrations, additional security features, advanced collaboration features, and integration with other apps
Link to Tool	https://mural.co

Mural is used by teams of all sizes, from start-ups to large enterprises, and across a range of industries, including design, marketing, product development, and education.

6.3.5 Padlet

Padlet is an online collaborative platform that allows users to create and share digital bulletin boards, or "padlets," with others. The platform is designed to be used in a variety of settings, including education, business, and personal use. With Padlet, users can create digital bulletin boards that contain a variety of multimedia content, such as text, images, videos, and documents. Users can also collaborate with others by inviting them to contribute to the padlet, allowing for real-time collaboration and feedback. Some of the key features of Padlet include:

1. **Customisable design:** Users can customise the design of their padlet, including backgrounds, fonts, and colours, to fit their specific needs and preferences.
2. **Multimedia content:** Padlets support a variety of multimedia content types, including text, images, videos, and documents.
3. **Collaboration tools:** Users can invite others to contribute to their padlets, allowing for real-time collaboration and feedback. Users can also control the level of access and editing rights for each collaborator.
4. **Privacy settings:** Padlet offers a range of privacy settings, allowing users to control who can access and contribute to their padlets.

5. **Integration:** Padlet integrates with a variety of other tools, making it easy to add content from these platforms to a padlet.
6. **Mobile apps:** Padlet has mobile apps for iOS and Android, allowing users to access and edit their padlets on the go.

Table 18 gives an overview on target group, functionalities, technical requirements and cost.

Table 18: Overview of Padlet

Target group	Educators, students, researchers
Main functionalities	<ul style="list-style-type: none"> ● Creating and customising boards ● Adding content ● Collaborating ● Organising information ● Sharing and publishing ● Integrations with other tools
Requirements	<ul style="list-style-type: none"> ● Operating System: Windows 7 or newer, macOS 10.11 or newer, or Chrome OS ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet ● Internet connection: stable Internet connection with a minimum speed of 5 Mbps recommended ● Mobile apps: Available as mobile apps for iOS (iOS 12.0 or later) and Android (Android 6.0 or later) devices
License / Cost	<ul style="list-style-type: none"> ● Free plan: Creating up to three boards with basic features, adding text, images, links, and files to your boards, and collaborate with others in real-time ● Paid plans (prices differ depending on versions): <ul style="list-style-type: none"> ○ Padlet Backpack for educators and schools: additional features such as enhanced privacy controls, LMS integrations, analytics, and support ○ Padlet Briefcase for business and organisations
Link to Tool	https://padlet.com

Padlet is used by a wide range of organisations, including schools, universities, businesses, and individuals. It is particularly popular in education, where it is used for collaborative projects, brainstorming, and student feedback.

6.3.6 Slack

Slack is a cloud-based instant messaging and team collaboration tool. It allows teams to communicate and collaborate on projects in real-time, no matter where they are located. Slack provides a platform for team members to communicate, share files, and organise their work. Slack provides both public and private channels for team members to communicate. Channels can be organised around specific projects, departments, or topics, and can be set up to include team members from different locations

and time zones. Slack also offers direct messaging, voice and video calling, and screen sharing capabilities. In addition, there is a range of integrations with other popular software tools, such as Trello and Asana, allowing teams to manage their projects and workflows seamlessly. Slack also offers a robust search function that allows users to easily find past conversations and files. Slack offers a wide range of features that enable teams to communicate and collaborate effectively. Some of the main features of Slack include:

1. **Channels:** Slack offers channels, which are dedicated spaces for team members to discuss specific projects or topics. Channels can be public or private, and team members can be added or removed as needed.
2. **Direct messages:** Slack allows team members to send direct messages to each other, allowing for one-on-one communication and collaboration.
3. **Video and voice calls:** Slack offers video and voice calling capabilities, allowing team members to connect face-to-face, no matter where they are located.
4. **File sharing:** Slack allows team members to easily share files, such as documents, images, and videos, with each other.
5. **Integrations:** Slack integrates with a wide range of other software tools, such as Trello and Asana, allowing teams to manage their workflows more effectively.
6. **Search:** Slack offers a powerful search function that enables team members to find past conversations, files, and messages quickly and easily.
7. **Customisation:** Slack allows users to customise their notifications, settings, and preferences, to suit their individual needs and working style.

Table 19 gives an overview on target group, functionalities, technical requirements and cost.

Table 19: Overview of Slack

Target group	Educators, students, researchers
Main functionalities	<ul style="list-style-type: none"> ● Channels ● Direct messaging ● File sharing ● Integrations with other tools ● Search ● Notifications ● Customisation ● Bots and automation
Requirements	<ul style="list-style-type: none"> ● Operating System: Latest versions of Windows, Mac, Linux, iOS, and Android recommended ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet, a minimum of 4GB of RAM and a dual-core processor for the best performance recommended

	<ul style="list-style-type: none"> • Internet connection: Stable Internet connection with a minimum speed of 1Mbps for desktop and web app users, and 220Kbps for mobile app users • Screen resolution: Optimised for screens with a minimum resolution of 1024x768 pixels
License / Cost	<ul style="list-style-type: none"> • Free plan: Including features such as channels, direct messaging, file sharing, and up to ten integrations. • Standard plan, Plus plan and Enterprise plan as paid plans (prices differ depending on versions): e.g. unlimited integrations, more storage and search functionality, and guest access.
Link to Tool	https://slack.com

Overall, Slack is a versatile and user-friendly tool that provides a comprehensive set of features for team communication and collaboration. It is particularly useful for remote teams, distributed teams, or teams working on complex projects that require frequent communication and coordination.

6.4 Learning management tools and applications

Learning management tools and applications are software systems that are designed to facilitate the creation, delivery, and management of educational courses and training programs. They provide educators and trainers with a centralised platform for creating and delivering online learning materials, tracking learner progress, and managing administrative tasks such as enrolment, grading, and reporting.

6.4.1 Blackboard

Blackboard is a web-based learning management system that provides a comprehensive platform for delivering online education and training courses. It is used by schools, colleges, universities, and other organisations to manage and deliver online courses and educational content. Blackboard provides a range of tools and features for creating and delivering course content, such as multimedia resources, discussion forums, and assessments. It also provides features for tracking student progress, such as gradebooks, analytics, and reporting tools. One of the strengths of Blackboard is its flexibility and customisation options. It allows instructors to add new features and functionality through the use of plugins and add-ons. Additionally, Blackboard is designed to integrate with other educational technologies, such as student information systems and learning analytics tools. Overall, Blackboard is a widely used and trusted platform for delivering online education and training courses. It is known for its robust feature set and its ability to meet the needs of a range of educational institutions and organisations. Blackboard has a wide range of features that make it a popular choice for learning management systems. Some of the main features of Blackboard include:

1. **Course management:** Blackboard provides tools for creating and managing online courses, including course materials, assignments, quizzes, and interactive activities.
2. **Communication tools:** Blackboard includes a variety of communication tools, such as discussion forums, messaging, and announcements, that allow students and instructors to communicate and collaborate in real-time.

3. **Content management:** Blackboard provides a centralized location for storing and managing course content, such as documents, videos, and other multimedia resources.
4. **Assessment and evaluation:** Blackboard includes a variety of assessment and evaluation tools, such as quizzes, assignments, and gradebooks, that allow instructors to track student progress and provide feedback.
5. **Mobile-friendly:** Blackboard is designed to be mobile-friendly and includes mobile apps for iOS and Android devices, allowing students to access course materials and participate in activities from their mobile devices.
6. **Analytics and reporting:** Blackboard provides detailed analytics and reporting tools that allow instructors to track student progress and identify areas where additional support may be needed.
7. **Integration:** Blackboard is designed to integrate with other educational technologies, such as student information systems and learning analytics tools.
8. **Customisation:** Blackboard is highly customizable and allows instructors to modify the look and feel of the platform, as well as add new features and functionality through plugins and add-ons.

Table 20 gives an overview on target group, functionalities, technical requirements and cost.

Table 20: Overview of Blackboard

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Course creation ● Course delivery ● Learning management ● Collaboration ● Communication ● Assessment and feedback ● Content management ● Mobile learning ● Analytics and reporting ● Integration with other systems
Requirements	<ul style="list-style-type: none"> ● Operating System: Windows 10, macOS 11 or newer, iOS 14 or newer, Android 11 or newer ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet, multi-core processor (e.g. Intel Core i5 or i7, AMD Ryzen 5 or 7) recommended for optimal performance, At least 8 GB of RAM recommended ● Internet connection: Stable and high-speed Internet connection ● Screen resolution: At least 1024 x 768 pixels ● Audio and Video: For multimedia content, your device must have speakers or headphones, and a webcam and microphone may be required for video conferencing
License / Cost	<ul style="list-style-type: none"> ● The cost of using Blackboard varies depending on several factors, including the size and type of institution, the version of Blackboard being used, and the specific features and services being utilised.

	Blackboard is not publicly available, as it is negotiated on a case-by-case basis between Blackboard and the institution.
Link to Tool	https://www.blackboard.com

Overall, Blackboard is a powerful and flexible platform that provides a wide range of features for managing and delivering online courses and educational content.

6.4.2 Canvas

Canvas is a cloud-based learning management system that provides an online platform for educational institutions to manage and deliver courses and learning materials. It is designed to facilitate teaching and learning, and to streamline administrative tasks for educators and students. Canvas offers a range of features that enable educators to create and deliver engaging learning experiences, including:

1. **Course creation and management:** Canvas allows educators to create and manage online courses, including syllabus, course materials, assignments, quizzes, and discussions.
2. **Collaboration:** Canvas provides tools for students to collaborate and interact with their classmates and instructors, such as video conferencing, messaging, and discussion forums.
3. **Learning resources:** Canvas enables educators to share learning resources such as videos, readings, and presentations with their students.
4. **Assessment and grading:** Canvas provides tools for educators to create and grade assignments, quizzes, and exams.
5. **Analytics and reporting:** Canvas provides analytics and reporting tools that allow educators to track student progress and engagement.
6. **Mobile-friendly:** Canvas is accessible on mobile devices, allowing students to access course materials and complete assignments on-the-go.
7. **Integration:** Canvas integrates with a range of third-party tools to enhance the learning experience.

Table 21 gives an overview on target group, functionalities, technical requirements and cost.

Table 21: Overview of Canvas

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Course creation and management ● Online discussions ● Assessment and quiz management ● Grading and gradebook ● Collaboration ● Multimedia support ● Mobile support ● Communication ● Analytics

	<ul style="list-style-type: none"> • Integrations with other tools
Requirements	<ul style="list-style-type: none"> • Operating System: Windows 10, Windows 8.1, Windows 7 Service Pack 1, Mac OSX 10.13, Mac OSX 10.14, Mac OSX 10.15 • Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge • Hardware: Desktop computer, laptop, tablet, Dual-core 2.0GHz processor or better (or Apple M1 processor), 4 GB RAM • Internet connection: Minimum of 512kbps download and upload speed • Mobile devices: iOS 12 or later for iPhones and iPads, Android 8.0 or later for Android devices
License / Cost	<ul style="list-style-type: none"> • The cost of using Canvas varies depending on several factors, including the size and type of institution, the version of Canvas being used, and the specific features and services being utilised. Canvas is not publicly available, as it is negotiated on a case-by-case basis between Blackboard and the institution.
Link to Tool	https://www.instructure.com/canvas

Canvas is used by educational institutions of all sizes. It is also used by individual educators and trainers who want to create and deliver online courses.

6.4.3 Moodle

Moodle is a popular open-source learning management system that is used by educators and organisations to create and deliver online courses and educational content. The name "Moodle" is short for "Modular Object-Oriented Dynamic Learning Environment". Moodle allows instructors to create online courses with interactive activities such as quizzes, discussion forums, and assignments. It also provides a variety of features for managing and tracking student progress, such as gradebooks, progress reports, and analytics. One of the strengths of Moodle is its flexibility and customisation options. It is highly modular and allows instructors to add new features and functionality through the use of plugins and add-ons. Additionally, Moodle is open-source software, which means that it is free to use and can be modified and customised to fit the needs of a particular institution or organisation. Moodle is widely used in education, ranging from primary schools to universities, as well as in corporate training and professional development. Moodle has a wide range of features that make it a popular choice for online learning management systems. Some of the main features of Moodle include:

1. **Course management:** Moodle allows instructors to easily create and manage online courses, including course materials, assignments, quizzes, and interactive activities.
2. **Communication tools:** Moodle includes a variety of communication tools, such as discussion forums, messaging, and chat, which allow students and instructors to communicate and collaborate in real-time.
3. **User management:** Moodle includes features for managing users, such as user roles, permissions, and authentication methods, which allow instructors to control access to courses and materials.
4. **Customisation:** Moodle is highly customisable and allows instructors to modify the look and feel of the platform, as well as add new features and functionality through plugins and add-ons.

5. **Assessment and evaluation:** Moodle includes a variety of assessment and evaluation tools, such as quizzes, assignments, and gradebooks, which allow instructors to track student progress and provide feedback.
6. **Mobile-friendly:** Moodle is designed to be mobile-friendly and includes mobile apps for iOS and Android devices, allowing students to access course materials and participate in activities from their mobile devices.

Table 22 gives an overview on target group, functionalities, technical requirements and cost.

Table 22: Overview of Moodle

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Course management ● Communication tools ● Collaboration tools ● Content creation ● Assessment and grading ● Learning analytics ● Customisation
Requirements	<ul style="list-style-type: none"> ● Operating System: Linux (Ubuntu, Debian, RedHat, CentOS, Fedora, openSUSE, or others), Windows Server 2012 or later ● Web server: Apache (recommended), Nginx, Microsoft IIS ● Database: MySQL 5.7.8 or later, or MariaDB 10.2.7 or later, PostgreSQL 9.5 or later ● PHP version: PHP 7.3 or later (PHP 7.4 or later recommended) ● Memory and storage: 2 GB of RAM or more, at least 10 GB of free disk space ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge
License / Cost	<ul style="list-style-type: none"> ● Free to download and use ● No licensing fee ● Cost for server hosting and third-party integrations
Link to Tool	https://moodle.org

Overall, Moodle is a powerful and flexible platform that provides a wide range of features for managing and delivering online courses and educational content.

6.5 Digital project management tools and applications

Digital project management tools and applications are software tools designed to help manage projects and collaborate with team members in a digital environment. These tools typically provide features such as task management, scheduling, communication, file sharing, and reporting.

6.5.1 Asana

Asana is a web-based project management and collaboration tool that enables teams and individuals to manage and track their work. It was designed to help teams and individuals stay organised,

communicate effectively, and collaborate on projects. Asana uses a task-based approach to project management, allowing users to create and assign tasks, set due dates, and track progress. Users can also create projects, which consist of a collection of tasks and subtasks that can be assigned to team members. Asana provides a range of collaboration and communication features, such as commenting, @mentions, and notifications, allowing teams to communicate and collaborate effectively. It also offers a range of integrations with other tools, such as Google Drive, Slack, and Microsoft Teams, to streamline workflows and increase productivity. Overall, Asana is a versatile and user-friendly tool that can be used by teams and individuals across a range of industries and disciplines to manage and track their work. Some of the main features of Asana include:

1. **Task management:** Asana allows users to create, assign, and manage tasks and subtasks. Users can set due dates, add descriptions, and attach files to tasks.
2. **Project management:** Users can create projects and assign tasks and subtasks to team members. Projects can be organised into sections, and users can set project goals and track progress.
3. **Collaboration:** Asana provides a range of collaboration features, such as commenting, @mentions, and notifications, allowing teams to communicate and collaborate effectively.
4. **Templates:** Asana offers a range of pre-built templates for common projects, such as marketing campaigns and product launches, to help teams get started quickly.
5. **Timeline view:** Asana's timeline view provides a visual representation of project schedules and deadlines, allowing teams to plan and adjust their timelines as needed.
6. **Custom fields:** Asana allows users to create custom fields to track additional information and metadata about tasks and projects.
7. **Integration:** Asana integrates with a range of other tools, such as Slack and Microsoft Teams, to streamline workflows and increase productivity.

Table 23 gives an overview on target group, functionalities, technical requirements and cost.

Table 23: Overview of Asana

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Task management ● Project management ● Collaboration ● Calendar view ● Customisation ● Reporting
Requirements	<ul style="list-style-type: none"> ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet ● Internet connection: stable and high-speed connection Internet connection
License / Cost	<ul style="list-style-type: none"> ● Free basic plan: Including basic project management features, such as task lists, boards, and calendars, for teams of up to 15 members ● Premium plan, Business plan and Enterprise plan as paid plans (cost depending on version): including additional features, such as

	custom fields, advanced reporting, and task dependencies, for teams of any size
Link to Tool	https://asana.com

Overall, Asana offers a range of industries and disciplines to manage and track their work. Its task and project management features, combined with its collaboration and integration capabilities, make it a powerful tool for increasing productivity and managing complex workflows.

6.5.2 Basecamp

Basecamp is a project management and team collaboration software developed by Basecamp LLC. It is a web-based platform that provides a set of tools for managing projects, tasks, and communication within teams. Basecamp offers a centralised hub for teams to organise their work and collaborate on projects. The platform includes features such as to-do lists, schedules, document sharing, real-time chat, and message boards. Users can create project templates and customise their workspace to fit their team's needs. One of the key features of Basecamp is its focus on simplicity and ease of use. The platform is designed to be intuitive and user-friendly, with a clean and minimalist interface that makes it easy to navigate and find the information you need. Another strength of Basecamp is its emphasis on communication and collaboration. The platform provides a range of tools for teams to work together, such as real-time chat and message boards, which can help reduce email clutter and streamline communication. Basecamp is used by a wide range of teams and organisations, including small businesses, start-ups, and larger companies. It has become a popular choice for remote teams, as it provides a centralised platform for managing projects and collaborating with team members, regardless of their location. Basecamp has a variety of features that help teams manage their projects and collaborate effectively. Some of the main features of Basecamp include:

1. **Project organisation:** Basecamp allows users to create projects and organise them into different categories, such as active projects, archived projects, or templates for future projects.
2. **To-do lists:** Within each project, users can create to-do lists and assign tasks to team members, set deadlines, and track progress.
3. **Schedules:** Basecamp provides a visual calendar that displays upcoming events and deadlines, making it easy for team members to stay on top of their tasks.
4. **Message boards:** Teams can use message boards to communicate with each other and discuss project-related topics. Users can post messages, reply to existing threads, or create new ones.
5. **Real-time chat:** Basecamp's Campfire feature provides a real-time chat platform for teams to communicate with each other instantly. Users can create chat rooms for specific projects or topics, and chat history is saved for future reference.
6. **Automatic check-ins:** Basecamp can automatically send out check-in questions to team members, helping managers stay informed about the progress of a project and identify potential roadblocks.
7. **Document sharing:** Teams can share files and documents within Basecamp, eliminating the need to use external file-sharing services. Users can upload files directly to Basecamp or link to files stored on other services.

8. **Mobile apps:** Basecamp has mobile apps for iOS and Android, allowing users to access their projects and communicate with their team members on the go.

Table 24 gives an overview on target group, functionalities, technical requirements and cost.

Table 24: Overview of Basecamp

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Project management ● Communication ● File sharing ● Schedule management ● Time tracking ● Reporting ● Integrations with other tools
Requirements	<ul style="list-style-type: none"> ● Operating system: Windows, macOS, Linux ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet, at least 2GB RAM and a modern CPU ● Internet connection: stable and high-speed connection Internet connection
License / Cost	<ul style="list-style-type: none"> ● Free personal plan: Including basic features such as three projects, 20 users, and 1 GB of storage ● Business plan as paid plan: Including unlimited projects, users, and storage, as well as advanced features such as time tracking, custom branding, and priority support
Link to Tool	https://basecamp.com/

Overall, Basecamp provides a comprehensive set of tools for managing projects and collaborating with team members. Its user-friendly interface and focus on communication make it a popular choice for teams of all sizes and types.

6.5.3 Trello

Trello is a web-based project management and collaboration tool that allows individuals and teams to organise and prioritise their tasks and projects. It was developed to provide a simple and intuitive way to manage complex workflows and projects. Trello uses a visual, card-based system to organise tasks and projects. Each card represents a task or an item in a project, and cards can be moved between lists or boards as the status of the task changes. Users can add descriptions, checklists, due dates, attachments, and comments to cards to provide additional context and details. Trello also offers a range of collaboration features, such as the ability to assign tasks to team members, share boards with others, and receive notifications and updates in real-time. It integrates with a range of other tools, such as calendars, email, and productivity apps, to provide a seamless workflow for project management. Some of the main features of Trello include:

1. **Boards and cards:** Trello uses a visual, card-based system to organize tasks and projects. Each card represents a task or an item in a project, and cards can be moved between lists or boards as the status of the task changes.
2. **Checklists and due dates:** Users can add checklists and due dates to cards to provide additional context and details.
3. **Attachments and comments:** Trello allows users to add attachments and comments to cards to provide more information and context.
4. **Collaboration:** Trello provides a range of collaboration features, such as the ability to assign tasks to team members, share boards with others, and receive notifications and updates in real-time.
5. **Integration:** Trello integrates with a range of other tools, such as calendars, email, and productivity apps, to provide a seamless workflow for project management.
6. **Customisation:** Trello allows users to customize their boards and cards with their own branding, labels, and colours.
7. **Mobile apps:** Trello offers mobile apps for iOS and Android, allowing users to manage their tasks and projects on-the-go.

Table 25 gives an overview on target group, functionalities, technical requirements and cost.

Table 25: Overview of Trello

Target group	Educators, students, administrators
Main functionalities	<ul style="list-style-type: none"> ● Boards ● Cards ● Collaboration ● Notifications ● Integrations with other tools ● Mobile app ● Schedule management ● Time tracking ● Reporting
Requirements	<ul style="list-style-type: none"> ● Operating system: Windows, macOS, Linux ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet ● Internet connection: stable and high-speed connection Internet connection
License / Cost	<ul style="list-style-type: none"> ● Free plan: Includes basic features such as unlimited boards, cards, and members, but with some limitations such as a maximum of 10MB file attachments and no power-ups ● Business Class plan as paid plan: Including advanced features such as unlimited Power-Ups, custom backgrounds and stickers, advanced checklists
Link to Tool	https://trello.com

Overall, Trello is a flexible and user-friendly tool that can be used for a wide range of projects and workflows, from personal to professional use. Its visual, card-based approach makes it easy to understand and use, while its collaboration and integration features make it a powerful tool for teams and organisations.

6.5.4 SessionLab

SessionLab is a web-based platform that provides tools for designing and facilitating workshops, meetings, and training sessions. It is designed to help facilitators, trainers, and educators create effective session plans and deliver engaging sessions. SessionLab allows users to create session plans using pre-built templates or custom designs. Users can add activities, exercises, and discussion topics to their session plans, and assign roles and responsibilities to team members. The platform also offers features such as time tracking, participant feedback, and reporting, allowing users to measure the success of their sessions and identify areas for improvement. One of the key features of SessionLab is its extensive library of pre-built session plans and activities. The platform provides a range of templates and exercises for different types of sessions, such as team building, strategic planning, or leadership development. Users can browse the library to find inspiration and adapt existing session plans to fit their needs. SessionLab also offers a range of collaboration tools that enable teams to work together on session plans. Users can share their plans with team members, assign tasks, and provide feedback in real-time, making it easy to collaborate on complex sessions. SessionLab is used by a wide range of organisations, including small businesses, non-profits, and educational institutions. It is particularly popular among facilitators and trainers who need a platform to design and deliver engaging workshops and training sessions. SessionLab offers a variety of features to help users design and facilitate effective workshops, meetings, and training sessions. Some of the main features of SessionLabs include:

1. **Session planning:** SessionLab allows users to create and customise session plans with a variety of pre-built templates and activities. Users can add activities, exercises, discussion topics, and assign roles and responsibilities to team members.
2. **Collaboration:** The platform offers tools for collaborating on session plans, including sharing plans with team members, assigning tasks, and providing feedback in real-time.
3. **Participant feedback:** SessionLab provides tools for collecting feedback from participants during and after a session, helping users measure the success of their sessions and identify areas for improvement.
4. **Time tracking:** The platform allows users to track the time spent on each activity and session, helping them stay on schedule and ensure they cover all the necessary topics.
5. **Reporting:** SessionLab provides reporting features that allow users to analyse the success of their sessions and identify areas for improvement. Reports can include participant feedback, time spent on activities, and other metrics.
6. **Resource library:** SessionLab offers a comprehensive library of pre-built session plans and activities, which users can browse and adapt to fit their needs.
7. **Custom branding:** Users can customise their session plans with their organisation's branding, including logos and colour schemes.
8. **Integration:** SessionLab integrates with a variety of other tools, including Slack and Trello, making it easy to incorporate the platform into existing workflows.

Table 26 gives an overview on target group, functionalities, technical requirements and cost.

Table 26: Overview of SessionLabs

Target group	Educators, trainers, facilitators
Main functionalities	<ul style="list-style-type: none"> ● Session planning ● Activity library ● Collaboration ● Customisation ● Session facilitation ● Reporting
Requirements	<ul style="list-style-type: none"> ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Optimised for desktop computers and laptops, but can be accessed on mobile devices ● Internet connection: stable and high-speed connection Internet connection
License / Cost	<ul style="list-style-type: none"> ● Free plan: Including basic features, including the ability to create and save up to five sessions, access to the activity library, and collaboration tools ● Professional plan, Team plan and Enterprise plan as paid plans (prices depending on version): Including additional features such as the ability to create and save an unlimited number of sessions, custom branding, and reporting tools
Link to Tool	https://www.sessionlab.com/

Overall, SessionLab is a powerful platform that provides a range of tools for designing and facilitating effective workshops, meetings, and training sessions. Its focus on collaboration and participant feedback makes it a popular choice among facilitators and trainers who need a platform to create engaging sessions.

6.6 Digital survey and gamification tools and applications

Digital survey tools are online platforms or applications that enable educators to create, distribute and collect survey data in a digital format. They often offer a range of question types, customisable design templates, and data analysis features. Gamification tools for education are applications or software that use game design elements, such as points, badges, and leaderboards, to enhance the learning experience. Gamification aims to increase engagement, motivation, and learning outcomes by making the process of learning more fun and interactive. Incorporating digital survey and gamification tools into education can help educators to better understand their students' needs and preferences while also creating a more engaging and interactive learning experience. These tools can also provide educators with valuable insights into student performance and progress, helping them to tailor instruction to meet the needs of individual students.

6.6.1 Kahoot!

Kahoot! is an online learning platform that uses gamification to engage learners of all ages. It is a cloud-based tool that allows users to create interactive quizzes, surveys, and games. Kahoot! is designed to make learning fun and interactive. It enables educators and trainers to create interactive games and quizzes that engage learners and encourage participation. Kahoot! games are played in real-time, with players answering questions on their own devices, while the game progress is displayed on a shared screen. Kahoot! offers a range of features that make it easy for educators and trainers to create and deliver engaging learning experiences, including:

1. **Customisable games:** Kahoot! allows educators to create games that are tailored to their specific learning objectives and subject matter.
2. **Interactive quizzes and surveys:** Kahoot! enables educators to create interactive quizzes and surveys that engage learners and encourage participation.
3. **Real-time feedback:** Kahoot! provides real-time feedback to learners and educators, allowing them to track progress and adjust their teaching accordingly.
4. **Mobile-friendly:** Kahoot! games can be played on any device with an internet connection, making it easy for learners to participate from anywhere.
5. **Collaboration:** Kahoot! enables learners to work together in teams, promoting collaboration and teamwork.
6. **Reporting and analytics:** Kahoot! provides detailed reporting and analytics, allowing educators to track learner progress and assess learning outcomes.

Table 27 gives an overview on target group, functionalities, technical requirements and cost.

Table 27: Overview of Kahoot!

Target group	Educators, trainers, facilitators, students
Main functionalities	<ul style="list-style-type: none"> ● Creating and customising quizzes ● Hosting lives games ● Assigning homework ● Analysing data
Requirements	<ul style="list-style-type: none"> ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Desktop computer, laptop, tablet, smartphone ● Internet connection: stable and high-speed connection Internet connection
License / Cost	<ul style="list-style-type: none"> ● Free plan: Allowing educators to create and share unlimited quizzes and surveys, host live games with up to 50 players, access basic analytics on player performance, including access to a library of public Kahoot! quizzes that can be used or modified for educational purposes ● Kahoot! Pro and Kahoot! Premium as paid plans (prices depending on version): Including advanced analytics, branding customisation, and the ability to host live games with up to 100 players

Link to Tool	https://kahoot.it
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Kahoot! is used by educators and trainers of all kinds, including teachers, corporate trainers, and educational institutions. It is also popular among families and individuals who want to learn in a fun and interactive way.

6.6.2 Mentimeter

Mentimeter is an interactive presentation and polling platform that enables presenters to engage their audience in real-time. It is a cloud-based tool that allows users to create interactive presentations, polls, quizzes, and surveys. Mentimeter is designed to help presenters and educators increase audience engagement and participation. It enables presenters to create interactive presentations that include live polls, quizzes, and Q&A sessions, allowing them to gather feedback from their audience in real-time. Mentimeter offers a range of features that enable presenters to create interactive and engaging presentations, including:

1. **Polls and quizzes:** Mentimeter allows presenters to create live polls and quizzes that can be embedded directly into their presentations.
2. **Word clouds:** Mentimeter enables presenters to create word clouds that visualise the most popular responses from their audience.
3. **Multiple question types:** Mentimeter offers a range of question types, including multiple-choice, open-ended, and rating questions.
4. **Customizable design:** Mentimeter allows presenters to customise the design of their presentations, including backgrounds, colours, and fonts.
5. **Real-time feedback:** Mentimeter provides real-time feedback to presenters, allowing them to track audience responses and adjust their presentations accordingly.
6. **Audience participation:** Mentimeter enables audience participation through the use of mobile devices, allowing audience members to respond to polls and quizzes using their smartphones or tablets.

Table 28 gives an overview on target group, functionalities, technical requirements and cost.

Table 28: Overview of Mentimeter

Target group	Educators, trainers, facilitators, students
Main functionalities	<ul style="list-style-type: none"> ● Creating and customising presentations ● Real-time audience interaction ● Data analysis ● Remote presenting
Requirements	<ul style="list-style-type: none"> ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Optimised for use on desktop and laptop computers, but it can also be accessed on mobile devices using the Mentimeter app for iOS or Android

	<ul style="list-style-type: none"> • Internet connection: stable and high-speed connection Internet connection
License / Cost	<ul style="list-style-type: none"> • Free plan: Allowing educators to create and share unlimited interactive presentations, including polls, quizzes, and word clouds, including basic data analysis features, such as the ability to see real-time responses and download results in Excel or PDF format • Mentimeter Basic and Mentimeter Pro as paid plans (prices depending on version): Including unlimited questions and responses, custom branding, and the ability to export data to PowerPoint
Link to Tool	https://www.mentimeter.com

Mentimeter is used by presenters and educators of all kinds, including teachers, trainers, conference speakers, and business professionals.

6.6.3 Socrative

Socrative is an interactive classroom tool designed for teachers to engage their students in a fun and interactive way. It allows teachers to create quizzes, games, and other activities that can be completed by students using their smartphones, tablets, or laptops. With Socrative, teachers can create multiple-choice quizzes, true/false questions, short answer questions, and other types of assessments. Students can then use their devices to respond to these questions, and the results are instantly displayed to the teacher. One of the unique features of Socrative is its ability to provide immediate feedback to students. Teachers can set up quizzes so that students receive immediate feedback on their responses, allowing them to quickly identify areas where they need to improve. Socrative also provides teachers with real-time reports and analytics that can be used to track student progress and identify areas where additional support may be needed. Socrative has a range of features that make it a popular tool for engaging students in the classroom. Some of the main features of Socrative include:

1. **Quizzes and assessments:** Socrative allows teachers to create quizzes and assessments with multiple-choice questions, true/false questions, short answer questions, and other types of questions.
2. **Real-time feedback:** Socrative provides students with immediate feedback on their responses, allowing them to quickly identify areas where they need to improve.
3. **Interactive activities:** Socrative allows teachers to create interactive activities such as games, exit tickets, and space races to engage students in the classroom.
4. **Reports and analytics:** Socrative provides teachers with real-time reports and analytics on student performance, allowing them to track progress and identify areas where additional support may be needed.
5. **Compatibility:** Socrative is compatible with a range of devices including smartphones, tablets, and laptops, making it easy for students to participate using their own devices.
6. **Collaboration:** Socrative allows students to collaborate on activities and share their responses with their classmates, encouraging teamwork and peer-to-peer learning.

Table 29 gives an overview on target group, functionalities, technical requirements and cost.

Table 29: Overview of Socrative

Target group	Educators, trainers, facilitators, students
Main functionalities	<ul style="list-style-type: none"> ● Creating and customising quizzes ● Real-time student response tracking ● Collaboration and group activities ● Gamification and rewards ● Accessibility and compatibility
Requirements	<ul style="list-style-type: none"> ● Web browser: Any modern web browser, such as Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge ● Hardware: Optimised for use on desktop and laptop computers, but it can also be accessed on mobile devices using the Mentimeter app for iOS or Android ● Internet connection: stable and high-speed connection Internet connection
License / Cost	<ul style="list-style-type: none"> ● Free plan: Allowing educators to create and deliver quizzes, polls, and exit tickets to up to 50 students at a time, including features such as real-time results, quiz and report sharing, and basic question types ● Socrative Pro as paid plan: Including unlimited student responses and activities, advanced question types, including open-ended questions and sorting activities, personalised quizzes and activities based on student performance, detailed reporting and data analysis, custom branding and school-wide management
Link to Tool	https://www.socrative.com/

Overall, Socrative is a powerful tool for engaging students in the classroom and providing teachers with valuable insights into student learning. It is used by educators in a variety of settings.

6.7 Screen capture applications

Screen capture applications are incredibly useful in e-coaching for several reasons. These tools allow coaches to record and capture various things happening on their screens, providing valuable insights, feedback, and guidance. One of the best use cases for screen capture tools is visual demonstration. Screen capture tools enable coaches to visually demonstrate various concepts, techniques, processes, or software by showing the students step-by-step actions on their screen coupled with voice-over verbal explanations. Typically, screen capture tools are very useful when introducing new tools to be used or showing how to use the learning management system of the course.

6.7.1 ScreenPal

ScreenPal (formerly known as Screencast-o-Matic) is a versatile screen capture and video recording tool that can be used for various purposes:

1. **Creating instructional videos:** ScreenPal allows you to record your screen along with audio narration, making it ideal for creating instructional videos. You can explain complex concepts, demonstrate software applications, walk through tutorials, or provide step-by-step instructions. This is particularly useful for coaches, educators, trainers, and content creators.
2. **Remote collaboration and communication:** ScreenPal enables remote collaboration by recording your screen and voice while discussing ideas or giving feedback. You can record video conferences, online meetings, or presentations to share with remote team members or clients. It helps improve communication, maintain project clarity, and foster collaboration regardless of geographical location.
3. **Software testing and bug reporting:** With ScreenPal, you can capture your screen while testing software or websites, helping you identify and report bugs or issues. Recording your actions along with audio explanations can provide developers with clear insights into the problem, making it easier for them to replicate and fix the issues.
4. **Demonstrating product features or reviews:** If you want to showcase the features of a product or provide reviews, ScreenPal allows you to record your screen while navigating through the product. You can highlight important functionalities, provide commentary, and offer an in-depth analysis, which can be helpful for product demonstrations, marketing materials, or consumer reviews.
5. **E-learning and online courses:** ScreenPal is widely used in e-learning and online course creation. You can record your screen to create video lectures, presentations, or interactive tutorials. The ability to capture audio narration, webcam footage, and screen interactions allows for engaging and immersive e-learning experiences.
6. **Customer support and troubleshooting:** ScreenPal can be used to provide remote customer support. You can record your screen while guiding customers through troubleshooting steps or demonstrating how to use a particular product or service. Sharing these videos can simplify complex instructions and help customers resolve issues more effectively.
7. **Personal productivity and organization:** ScreenPal can serve as a personal productivity tool. You can use it to create video notes, record important information, or document your workflow. This can be helpful for personal organization, keeping track of tasks, or creating tutorials for yourself.

Table 30 gives an overview on target group, functionalities, technical requirements and cost.

Table 30: Overview of ScreenPal

Target group	Educators, trainers, facilitators, students
Main functionalities	<ul style="list-style-type: none"> ● Screen recorder ● Video editor ● Screenshots ● Stories ● Stock library ● Video & content hosting ● Video quizzing

	<ul style="list-style-type: none"> • Video analytics
Requirements	<ul style="list-style-type: none"> • Windows 10 and later or macOS 10.13: High Sierra or later • 2.66 Ghz Intel® or any other compatible processor / faster processor • 4GB or more memory recommended
License / Cost	<ul style="list-style-type: none"> • Free plan: Including basic features such as screen capture, video and image editing and content hosting and management • Deluxe, Premier, Max and Team plans both for business and education with more features
Link to Tool	https://screenpal.com/

Overall, ScreenPal is a versatile tool that can be used for instructional videos, remote collaboration, software testing, product demonstrations, e-learning, customer support, and personal productivity. Its screen recording and editing capabilities make it a valuable asset for a wide range of individuals and professionals.

6.8 Video and audio editing applications

Video and audio editing applications might be useful in the e-coaching context for various learning assignments that students produce. Sometimes they might need to be able to record and edit video and/or audio (for example when creating podcasts or vodcasts).

6.8.1 Shotcut

Shotcut is a free, open source, cross-platform video editor that offers several benefits for e-coaching purposes:

1. **Easy to use:** Shotcut has a user-friendly interface with intuitive controls, making it accessible to both educators and students, even those with limited video editing experience. Its straightforward design allows users to quickly learn the basics and start creating videos without significant barriers to entry.
2. **Versatile editing features:** Shotcut provides a wide range of editing features and tools, allowing educators and students to create professional-looking videos. It supports various video and audio formats, and users can perform tasks such as trimming and cutting clips, adjusting playback speed, adding transitions, applying visual effects, and incorporating text or captions. These capabilities enable creativity and enhance the visual quality of educational videos.
3. **Multi-platform compatibility:** Shotcut is available for Windows, macOS, and Linux, which makes it suitable for educational institutions using different operating systems. This cross-platform compatibility ensures that educators and students can access and use Shotcut regardless of the devices they have.
4. **Free and open-source:** Shotcut is free to download and use, making it accessible to schools and students with limited budgets. Being open-source, it allows for customization and

collaboration, giving users the opportunity to modify and improve the software based on their specific educational needs.

5. **Wide range of output options:** Shotcut supports various output formats and resolutions, including popular video sharing platforms and social media platforms. This flexibility allows educators and students to export their videos in the desired format for different purposes, such as sharing videos with students, uploading content to learning management systems, or publishing on online platforms.
6. **Integration with other educational tools:** Shotcut seamlessly integrates with other educational tools, making it a valuable asset for educators. It can be used alongside screencasting software, presentation tools, and learning management systems to create engaging and interactive video content for lectures, tutorials, demonstrations, or student projects.
7. **Creative expression and multimedia learning:** Shotcut empowers educators and students to express their creativity and enhance multimedia learning experiences. It enables the incorporation of images, audio, and video footage into educational videos, allowing for more dynamic and engaging content. Students can also use Shotcut to develop their multimedia projects, fostering critical thinking and digital media skills.

Table 31 gives an overview on target group, functionalities, technical requirements and cost.

Table 31: Overview of Shotcut

Target group	Educators, trainers, facilitators, students
Main functionalities	<ul style="list-style-type: none"> ● Wide format support ● A lot of audio features ● A great deal of video effects ● Ample editing features ● Cross platform and codec independent ● Versatile display and monitoring options ● Great hardware support
Requirements	<ul style="list-style-type: none"> ● Operating system: 64-bit Windows 10 - 11, Apple macOS 10.14 - 13., or 64-bit Linux with at least glibc 2.31. ● CPU: x86-64 Intel or AMD; at least one 2 GHz core for SD, 4 cores for HD, and 8 cores for 4K. ● GPU: OpenGL 2.0 that works correctly and is compatible on Linux, DirectX 11 on Windows. ● RAM: At least 4 GB for SD, 8 GB for HD, and 16 GB for 4K. ● Hard drive: the bigger, the better ● Network: Shotcut does NOT require access to the network to activate, check a subscription, or send usage analytics. However, some links in the Help menu do link out to this web site. If you have files on a fast (at least 1 Gb/s) network share you can access them from there through your operating system.
License / Cost	<ul style="list-style-type: none"> ● Free, open-source
Link to Tool	https://shotcut.org/

In summary, Shotcut is a suitable app for e-coaching due to its ease of use, versatile editing features, multi-platform compatibility, cost-effectiveness, wide range of output options, integration with other tools, and support for creative expression and multimedia learning. By leveraging Shotcut, educators and students can create compelling educational videos that enhance teaching and learning experiences.

6.8.2 Audacity

Audacity is a free, open-source audio editing and recording software that provides users with a wide range of tools and features for working with audio files. Here is a summary of what Audacity offers:

1. **Audio editing capabilities:** Audacity allows users to perform various editing tasks on audio files. You can cut, copy, paste, and delete sections of audio, as well as adjust the volume, pitch, and tempo. It supports multiple tracks, enabling you to mix and layer different audio elements seamlessly.
2. **Recording and playback:** Audacity enables you to record audio directly through a microphone or other input sources. You can capture live audio, voiceovers, interviews, podcasts, or music performances. It offers real-time monitoring and precise control over recording levels, ensuring high-quality audio capture.
3. **Effects and filters:** Audacity provides a wide array of built-in audio effects and filters. These include equalization, noise reduction, compression, amplification, reverb, and more. You can apply these effects to enhance the audio quality, remove background noise, or create unique soundscapes.
4. **Plug-in support:** Audacity supports third-party plug-ins, which allows users to expand its functionality. There is a vast library of plug-ins available for download, offering additional effects, tools, and capabilities. This flexibility makes Audacity adaptable to various audio editing needs and preferences.
5. **Multi-platform compatibility:** Audacity is available for Windows, macOS, and Linux, making it accessible to a broad user base across different operating systems. Its consistent user interface and functionality ensure a seamless experience regardless of the platform used.
6. **Advanced features:** Audacity includes advanced features such as spectral editing, which allows you to visualize and manipulate audio frequencies. It also supports batch processing, which enables you to apply effects or edits to multiple files simultaneously, saving time and effort.
7. **Easy-to-use interface:** Despite its extensive features, Audacity maintains a user-friendly interface. The intuitive layout and straightforward controls make it accessible to beginners while still catering to the needs of experienced audio editors. Additionally, Audacity provides comprehensive documentation and online resources, assisting users in getting started and mastering the software.

Table 31 gives an overview on target group, functionalities, technical requirements and cost.

Table 31: Overview of Audacity

Target group	Educators, trainers, facilitators, students
Main functionalities	<ul style="list-style-type: none"> ● Recording: Audacity can record live audio through a microphone or mixer, or digitize recordings from other media.

	<ul style="list-style-type: none"> ● Export/import: Import, edit, and combine sound files. Export your recordings in many different file formats, including multiple files at once. ● Sound quality: Supports 16-bit, 24-bit and 32-bit. Sample rates and formats are converted using high-quality resampling and dithering. ● Plugins: Support for LADSPA, LV2, Nyquist, VST and Audio Unit effect plug-ins. Nyquist effects can be easily modified in a text editor – or you can even write your own plug-in. ● Editing: Easy editing with Cut, Copy, Paste and Delete. Also unlimited sequential Undo (and Redo) in the session to go back any number of steps. ● Effects: Real-time preview of LADSPA, LV2, VST and Audio Unit (macOS) effects. Plug-in Manager handles plug-in installation and addition/removal of effects and generators from the menus. ● Accessibility: Tracks and selections can be fully manipulated using the keyboard. Large range of keyboard shortcuts. ● Analysis: Spectrogram view mode for visualizing and selecting frequencies. Plot Spectrum window for detailed frequency analysis.
Requirements	<ul style="list-style-type: none"> ● Windows 10 / 11 (32- or 64-bit) ● 2 GHz Intel® or any other compatible processor / faster processor ● 4GB or more memory recommended
License / Cost	<ul style="list-style-type: none"> ● Free, open-source
Link to Tool	https://www.audacityteam.org/

In summary, Audacity is a versatile audio editing and recording software offering a range of features, effects, and tools. It is suitable for a wide range of users, from beginners to professionals, and provides the necessary tools to edit, enhance, and manipulate audio files. Its multi-platform compatibility, extensive documentation, and user-friendly interface make Audacity a popular choice for audio editing needs.

6.9 Plagiarism checking applications

For e-coaching purposes, plagiarism checking applications are mostly relevant in cases where students return written assignments. Plagiarism checking applications play a crucial role in promoting and upholding academic integrity. These tools help e-coaches identify instances of plagiarism, which involves using someone else's work without proper attribution. By detecting and addressing plagiarism, e-coaches can reinforce the importance of originality, critical thinking, and ethical academic practices among students.

6.9.1 Turnitin

Turnitin is a widely used plagiarism detection software that provides educators with a comprehensive solution for evaluating the originality of student work. The students can also use the tool themselves to prevent accidental plagiarism. It nowadays even has an AI checker to detect text written by artificial intelligence, such as ChatGPT. Here's a summary of Turnitin's features and benefits:

1. **Plagiarism detection:** Turnitin uses advanced algorithms to compare student submissions against an extensive database of published works, academic journals, websites, and previously submitted student papers. This helps educators identify instances of potential plagiarism by highlighting similarities and providing a similarity score.
2. **Feedback and grading:** Turnitin enables educators to provide detailed feedback and grading directly within the software. Educators can highlight specific areas of concern, add comments, and make suggestions for improvement. This streamlines the feedback process and allows for effective communication between educators and students.
3. **Originality reports:** Turnitin generates originality reports for each student submission, highlighting any matching or similar content found in the database. These reports provide educators with a visual representation of potential plagiarism, including the original sources and the percentage of matching text. It assists educators in assessing the originality of student work and identifying areas that require further investigation.
4. **Educational resources:** Turnitin offers educational resources and instructional materials to support educators in teaching academic integrity and proper citation practices. These resources include lesson plans, guides, and tutorials that help educators educate students about plagiarism, citation, and ethical writing practices.
5. **Integrated grading and assessment:** Turnitin integrates with learning management systems (LMS) and other educational platforms, allowing educators to seamlessly incorporate plagiarism checking and grading into their existing workflows. This integration simplifies the process of assigning, submitting, and grading assignments, saving time and effort for educators.
6. **Formative assessment:** Turnitin can be used for formative assessment by allowing students to submit drafts of their work for feedback and improvement. This iterative process encourages students to develop their writing skills and promotes academic growth.
7. **Academic integrity promotion:** Turnitin helps promote academic integrity by creating a culture of accountability and honesty. By using the software, educators send a clear message to students that originality and ethical writing practices are valued. It encourages students to develop critical thinking, research skills, and proper citation habits.
8. **Institutional reporting and analytics:** Turnitin provides institutions with detailed reports and analytics, allowing administrators and educators to monitor the usage and effectiveness of the software. These insights help institutions identify trends, assess student performance, and make informed decisions regarding academic integrity policies and educational interventions.

Table 32 gives an overview on target group, functionalities, technical requirements and cost.

Table 32: Overview of TurnItIn

Target group	Educators, trainers, facilitators, students
Main functionalities	<ul style="list-style-type: none"> ● Originality: Address the originality of student work and emerging trends in misconduct with this comprehensive solution ● Gradescope: Deliver and grade paper-based assessments from anywhere using this modern assessment platform ● iThenticate: This high-stakes plagiarism checking tool is the gold standard for academic researchers and publishers ● Similarity: This robust, comprehensive plagiarism checker fits seamlessly into existing workflows ● Feedback Studio: Give feedback and grade assignments with this tool that fosters writing excellence and academic integrity ● ExamSoft: Improve program outcomes with instant data insights from secure digital exams taken offline
Requirements	<ul style="list-style-type: none"> ● Windows® 8.1, 10, 11; Mac OS X El Capitan 10.11; ChromeOS ● Chrome, Firefox, Safari, Microsoft Edge ● Internet browser set to allow all cookies from Turnitin.com/TurnitinUK.com ● Javascript enabled
License / Cost	<ul style="list-style-type: none"> ● Free trial ● Custom pricing based on organisation needs
Link to Tool	https://www.turnitin.com/

In summary, Turnitin is a comprehensive plagiarism detection software that assists educators in identifying instances of potential plagiarism, providing feedback and grading, generating originality reports, offering educational resources, integrating with existing platforms, supporting formative assessment, promoting academic integrity, and providing institutional reporting and analytics. By leveraging Turnitin, educators can uphold academic standards, educate students about plagiarism, and foster a culture of integrity in academic institutions.

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