

# PREPARING FOR (FUTURE) WORK? SUPPORTING SOFT SKILL DEVELOPMENT IN THE CONTEXT OF HIGHER EDUCATION WITH A DIGITAL INSTRUMENT FOR 360° FEEDBACK

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## Abstract

How do learners in higher education get awareness of and insights in their soft skill levels? How can institution support soft skill development using digital tools? Soft skills are intra- and interpersonal (social) skills, essential for personal development, social participation and success in the workplace. Soft skills are considered to be crucial for the employability of individual employees as well as for the adaptivity and competitive position of organizations. However, measuring and supporting the development of soft skills in students and employees remains a challenge. The 360° Learning project, a practice-oriented research-project conducted at AP University College of Applied Sciences and Arts aims at designing and developing a 360° learning environment for the diagnosis and support of soft skills in students and employees. The project elaborates on models and instruments from earlier research, especially a project called Kickstart Your Soft Skills. The 360° Learning project uses Educational Design Research as a methodological framework. The current contribution describes the exploration phase and the initial steps of the design phase. During the exploration phase a needs analysis was conducted using an online survey (n=238) and seven focus group panels (n=27). Results were used as input for the design phase that started off with the organization of three service design teams that convened three times for a three hour workshop with the aim of providing ideas and guidelines for the design of the actual digital 360° Learning environment. The contribution describes results of the needs analysis and service design teams. The survey demonstrated differences in explicit attention devoted to specific soft skills across the institution as a whole and in various departments. Focus group panels pointed towards challenges in measuring soft skills objectively as well as availability of support materials. Informed by the input of the needs analysis service design teams developed design guidelines centered around eight topics. They also provided a rough framework for designing a prototype of a digital 360° learning environment on eight soft skills.

**Keywords:** Practice-Oriented Scientific research, soft skills, higher education, lifelong learning, technology enhanced learning, educational design research, design thinking

## 1 INTRODUCTION

### 1.1 Problem statement

Soft skills are a set of non-technical skills and knowledge that underpin successful participation in work. They are non-job specific and are closely connected with personal attributes and attitudes (confidence, discipline, self-management, ...), social (communication, working in teams, ...) and management abilities (time keeping, problem solving, critical thinking, ...) [1]. Soft skills are intra- and interpersonal (social) skills, essential for personal development, employability, social participation and success in the workplace [2]. Organisations and policy makers consider soft skills to be a crucial factor in gaining or retaining a competitive edge or stimulating innovation) [3] [4]. Consequently soft skill development is gaining increased attention in both (higher) education as well as in workplace learning.

However, despite general awareness of the importance of soft skills, nowadays students seem to make the transition to the labour market with an adequate knowledge base and job-specific skills (hard skills) at best [5]. Additionally, young adults tend to underestimate the importance of soft skills at the workplace and overestimate their personal soft skill-level [6]. Also, due to the less tangible nature of (some) soft

skills, higher education institutes struggle with measuring and supporting soft skill development of students.

In response to these observations AP University of Applied Sciences and Arts together with a Bulgarian organization called Fabrica 360 started developing a toolbox for measuring and supporting soft skill development, called *Kickstart Your Soft Skills* [7]. The digital toolbox consists of a validated self-report questionnaire that targets sixteen soft skills. Filling in this online survey will produce an individual feedback report for students or employees, but also additional feedback reports for teachers or job coaches. The generated feedback is score-specific. Finally a limited amount of supportive materials on soft skill development were incorporated in the instrument.

However, use of the toolbox made it clear that it was important to triangulate self-report data with information from other sources to achieve a more valid assessment of actual soft skill levels and stimulate soft skill development. Therefore a follow-up project was started, called the 360° Learning project with the aim of exploring as to whether or not the KYSS tool could be expanded to include soft skill assessment and feedback from other sources, e.g. teachers, mentors, colleagues on an internship, ... [8] . The current study is situated in the latter project and describes the preliminary needs analysis research and the design of the initial prototype of the 360° digital learning environment using design teams. As the project is ongoing no final products are available at this time.

## 1.2 Theoretical frameworks

### 1.2.1 Soft skills as a substantive framework

The theoretical framework on soft skills was developed during the KYSS-project [7]. In this project a literature review inventoried soft skills incorporated in existing soft skill-models. Subsequently, the top 25 of most frequently mentioned soft skills were prioritised by stakeholders in both the institute for higher education and the labour market. This resulted in a model of 16 soft skills organised in four overarching domains. These soft skills were deemed relevant for higher education and the workplace. Figure 1 provides a schematic overview of the structure of the model, while Table 1 contains a short description of the incorporated soft skills.

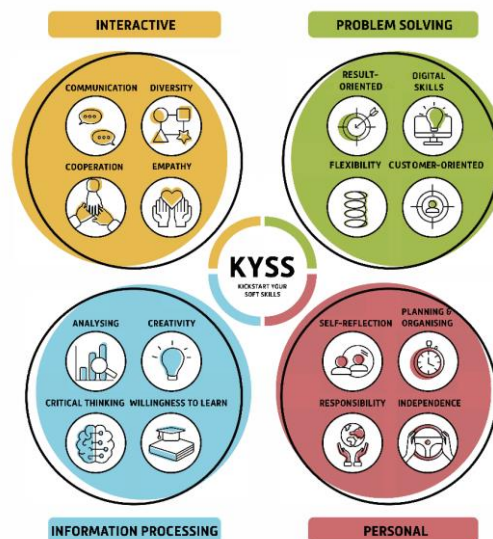


Figure 1: The Kickstart Your Soft Skills-model

| <b>Domain</b>                 | <b>Skill</b>                     | <b>Description</b>   |
|-------------------------------|----------------------------------|--|
| <b>Interaction</b>            | <i>Communication</i>             | The way you communicate information orally and/or in writing.  |
|                               | <i>Diversity</i>                 | Your attitude towards people with a different background compared to yours and how you deal with them.                               |
|                               | <i>Cooperation</i>               | The way you behave and treat others while working together.  |
|                               | <i>Empathy</i>                   | The extent to which you pay attention to the feelings and needs of others, respect them and respond to them appropriately.           |
| <b>Problem solving</b>        | <i>Result-oriented</i>           | The extent to which you think about the results you need to achieve and actively pursue your goals.                                  |
|                               | <i>Digital skills</i>            | The extent to which you have the knowledge and skills to deal with ICT and technological developments.                               |
|                               | <i>Flexibility</i>               | The extent to which you adapt your approach or behaviour to changing circumstances.  |
|                               | <i>Customer-oriented</i>         | The extent to which you take into account customers' needs and act accordingly.  |
| <b>Information processing</b> | <i>Analysing</i>                 | The extent to which you are able to analyse information, and connect various types or sources of information.                        |
|                               | <i>Creativity</i>                | The extent to which you develop original ideas, solutions or methods.  |
|                               | <i>Critical Thinking</i>         | The extent to which you evaluate information in an objective and critical way in order to derive your own, well-founded conclusions. |
|                               | <i>Willingness to learn</i>      | The extent to which you are willing and able to expand your expertise through learning.  |
| <b>Personal</b>               | <i>Self-reflection</i>           | The extent to which you reflect on your own behaviour and take account of feedback from others.                                      |
|                               | <i>Planning &amp; organising</i> | The extent to which you set goals and priorities and manage your time efficiently.   |
|                               | <i>Responsibility</i>            | The extent to which you follow rules, norms and values.  |
|                               | <i>Independence</i>              | The extent to which you take initiative in performing tasks and are pro-active.  |

*Table 1: description of the soft skills in the KYSS-model*

### 1.2.2 Educational design research and service design thinking as process frameworks

Methodologically, The 360° Learning project uses Educational Design Research [9] as a framework. EDR can be described as a type of research in which complex real life problems are used as a starting point for both the development of a solution as well as scientific research [10]. Solutions or interventions and scientific knowledge are developed in unison and mutually strengthen each other (Figure 2; [9]).

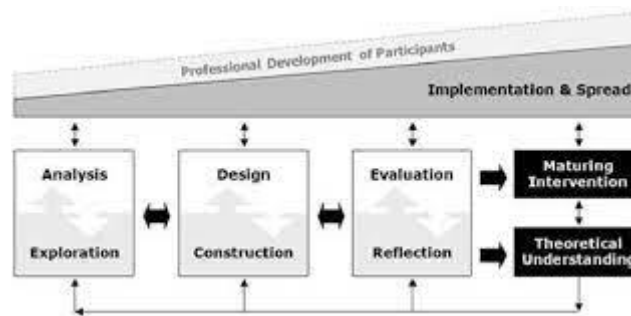


Figure 2: Generic model for Educational Design Research [9]

To conceptualize the interaction between research and the design of intervention EDR proved to be adequate. However, specifically regarding methodologies for designing the actual learning environment it proved to be too general in nature. Therefore, the study opted for service design [11] as an additional framework. Service design is contemporary methodology for designing and innovating products and services. It provided the project with a toolbox of methodologies to be used in both the needs analysis as well as the design phase.

### 1.3 The current study & Research questions

The 360° Learning project aims at developing a digital toolbox for soft skill development. The toolbox will provide multiple stakeholders (student, teacher, coach, mentor, ...) to assess the soft skill level of a student or employee in question. It will also provide these stakeholders with supportive materials to stimulate soft skill development. The current study targets the analysis phase and preliminary steps of the design phase according to the EDR-framework. It describes the results of the exploratory needs analysis which consisted of an online survey with teachers and follow-up focus group panels. It also sheds light on service design teams as a method of designing an initial prototype of the digital learning environment. The following research questions guided our research:

- **RQ1:** What soft skills are targeted during educational programs in higher education as perceived by teachers? Does attention to specific soft skills differ according to department?
- **RQ2:** What needs and pitfalls do teachers perceive in measuring soft skills (development)? How can these topics be adhered to?
- **RQ3:** What needs and pitfalls do teachers perceive in supporting soft skills (development)? How can these topics be adhered to?

## 2 METHODOLOGY

### 2.1 Online survey

In December 2020 an online questionnaire was administered to 1026 teachers from AP University of Applied sciences and Arts. 238 at least partially filled in the questionnaire constituting a response rate of 23%. Participation varied across department with the largest portion from respondents stemming from the department of health science (30%). An overview is provided in Table 2.

Among others things the questionnaire asked teachers what soft skills from the KYSS-model they explicitly addressed during their course-modules and how the development of these soft skills was monitored and assessed. Researchers subsequently analysed these data using descriptive statistics, data-visualisations and ANOVA-analyses. Analyses were conducted in SPSS and R.

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*Table 2. Participation to the online survey across departments*

| Department                           | Percentage |
|--------------------------------------|------------|
| Department of Health                 | 30%        |
| Department of Science and Technology | 25%        |
| Department of Business               | 20%        |
| Department of Teacher Education      | 15%        |
| Department of Arts                   | 7%         |
| Multiple Departments                 | 3          |

## **2.2 Focus group panels**

In May and June 2021, seven focus group panels were organised with three to four participants, constituting a total of 26 participants. The focus group panels were structured using a semi-structured interview guide. Topics included existence, examples and quality of support materials for specific soft skills; priorities in the need of developing additional support materials; Experiences with and preferences in various type of support materials (e.g. video, written materials, ...), needs and pitfalls in assessing soft skills.

Data from the focus group panels were analysed by two researchers. Insights were formulated on a research-wall for each focus group panel separately and subsequently across all panels as a starting point for the formulation of design guidelines during the service design teams.

## **2.3 Service Design Teams**

Between September and December 2022, three service design teams were organised with the aim of discussing results of the needs analysis, providing solutions for topics that emerged from the needs analysis and compiling guidelines for the research team for designing a prototype of the actual 360° learning environment. three teams convened three times in three design workshops. Participants included students, teachers, researchers and professionals. Each workshop lasted about three hours.

# **3 RESULTS**

To answer our research question, two research actions were conducted: an online survey and focus group panels.

## **3.1 Online survey**

Figure 3 inventories which soft skills are explicitly targeted by the educational programs in institution as perceived by the teachers teaching these programs. These provide an indication of how visibly or explicitly various soft skills are incorporated within a program and to what degree specific soft skills are targeted across the institution as a whole. A first observation is that all 16 soft skills are targeted within the institution to a degree although a difference in prevalence of about 40% is noticeable. The top three skills across all departments are communication (98%), cooperation (88%) and critical thinking (78%). They seem to be prevalent across all programs as they are mentioned by almost all participants. The least targeted soft skills are customer oriented working (51%), digital skills (51%) and result-oriented working (58%).

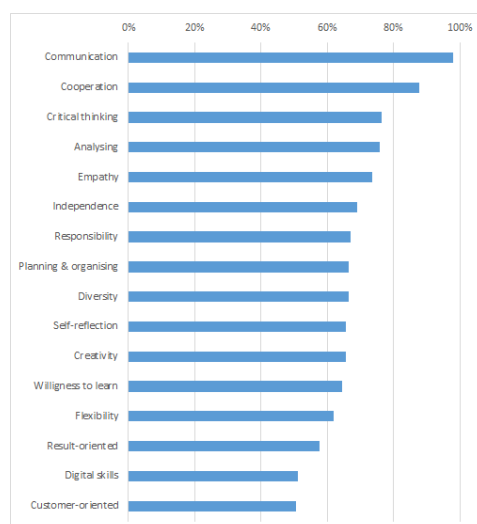


Figure 3: Perceived prevalence of soft skills in courses across all departments

More in-depth analyses point out differences in prevalence of specific soft skills across departments. A first observation is that the average prevalence across all soft skills differs between departments, with the teacher education department devoting explicit attention to a broad range of soft skills, as demonstrated by a high overall average. The departments of science and technology or arts, on the other hand, are devoting explicit attention to a more narrow set of soft skills. Overall, the top five in soft skills (communication, cooperation, critical thinking, analyzing and empathy) seem to be quite prevalent across all departments and therefore provide a good starting point for developing supportive materials that could be implemented across the entire institution.

Table 3: Perceived prevalence of soft skills across departments

|                         | Health | Business | Teacher | Science | Arts |
|-------------------------|--------|----------|---------|---------|------|
| Communication           | 100%   | 100%     | 100%    | 97%     | 85%  |
| Cooperation             | 92%    | 84%      | 94%     | 89%     | 73%  |
| Critical Thinking       | 78%    | 78%      | 84%     | 71%     | 69%  |
| Analysing               | 77%    | 78%      | 88%     | 72%     | 59%  |
| Empathy                 | 85%    | 73%      | 78%     | 63%     | 61%  |
| Independence            | 71%    | 69%      | 78%     | 63%     | 61%  |
| Responsibility          | 70%    | 67%      | 81%     | 60%     | 53%  |
| Planning and organising | 60%    | 67%      | 88%     | 63%     | 61%  |
| Diversity               | 82%    | 51%      | 88%     | 52%     | 66%  |
| Self-reflection         | 67%    | 60%      | 81%     | 62%     | 61%  |
| Creativity              | 67%    | 67%      | 88%     | 52%     | 63%  |
| Willingness to learn    | 64%    | 53%      | 78%     | 66%     | 69%  |
| Flexibility             | 62%    | 60%      | 88%     | 54%     | 50%  |
| Result-oriented         | 51%    | 64%      | 63%     | 55%     | 61%  |
| Digital skills          | 37%    | 55%      | 69%     | 55%     | 48%  |
| Consumer-oriented       | 63%    | 56%      | 41%     | 43%     | 32%  |
| Total Department        | 70%    | 68%      | 80%     | 64%     | 61%  |

### 3.2 Focus group panels

The aim of the focus group panels was to gauge teachers' need in measuring (RQ2) and supporting (RQ3) soft skills. Given the complexity of the data gathering and the availability of space, we limit ourselves to describing the main results.

First of all, participants pointed out challenges in *measuring soft skills objectively* as individual teachers operationalize the various skills differently. Moreover soft skills are often integrated in the curriculum in a fragmented way, precluding a unified definition of specific skills. Participants therefore feel a need for a shared and coherent frame of reference that can be applied across the entire University of applied sciences. Additionally participants provided some suggestions concerning an objective approach in measuring soft skills: Multiple measurement moments, providing students with feedback from multiple perspectives, providing descriptions of desired behavior using rubrics, devoting attention to the professional development of teachers regarding coaching and soft skill development.

Concerning the *support of soft skill development* in students, participants pointed lacking educational material regarding the following soft skills: Critical thinking, diversity, empathy, planning and organising, willingness to learn and analyzing. They also notice that available material at the university of applied sciences tend to focus more on the assessment of soft skills and less on supporting development. Additionally they considers these material to be too generic, lacking focus on the specific program in which they are implemented. Finally, according to teachers, students have trouble finding available materials. Participant advise taking into account the following criteria when developing educational materials: Provide adequate possibilities for interaction, offer students a benchmark (e.g. scores on the KYSS questionnaire) that they can use to assess their current soft skill levels and monitor future developments. Additionally participants suggested implementing short digital learning pathways and short self-assessments instead of relying on portfolio-measures for monitoring soft skill development as students tend to be less enthusiastic about the latter. Finally, participants point out that peer-assessment can be a valuable tool for monitoring soft skill development, although it requires time and energy in familiarizing students with the method. According to participants not all students are sufficiently competent or efficacious in providing feedback to peers resulting in a more shallow assessment.

### 3.3 Service Design Teams

Insights from both the digital survey and the focus group panels were inventoried on a research wall. Subsequently they were used as input in service design teams. The aim of teams was twofold. First the team was to write up design guidelines, by which the quality of prototypes could be assessed. Second, parallel teams were to design materials to be included in the initial prototype of the 360° learning environment

During the first workshop participants formulated design guidelines, points of attention and insights regarding the format and practical design of the digital 360° learning environment, using a post-it methodology. These were subsequently clustered in eight topics: (1) safety; (2) time efficiency; (3) feedback literacy; (4) no jargon; (5) motivation; (6) interactive; (7) usability; and (8) triple win. Input from the teams were reformulated into questions to act as criteria (Table 4).

During the second and third workshop the aim was to (re)design support material to strengthen soft skills development. Eight soft skills were selected based on the results from the survey and the needs formulated in the focus group panels: (1) Diversity; (2) Empathy; (3) Flexibility; (4) Analysing; (5) Critical thinking; (6) Willingness to learn; (7) Responsibility; (8) Planning and organising. Both frequently and less-frequently targeted skills were chosen. Participants prioritised the soft skills they wanted to work on and were divided into parallel sub-groups based on their preferences. Thus each participant was involved in two sessions, each on a specific skill. Participants were asked to bring their own materials on these skills. This was supplemented by materials provided by the researchers. In the first phase of each workshop, materials were explored using the design criteria as a reference. In the second phase materials were adapted and integrated to be included in the digital 360° learning environment.

Table 4. Checklist design guidelines

| Guideline                | Questions  |
|--------------------------|--|
| <i>Safety</i>            | What about data privacy?<br>What happens to the confidential information?<br>Does the learner determine what information is made available?<br>Does the learner determine who can see this information?<br>Are there barriers to being vulnerable and asking for feedback?   |
| <i>Time efficiency</i>   | How much time should you invest?<br>Is it user friendly and clear?<br>Is it easy to access?<br>Is there a rapid learning rate?<br>Does it require a lot of clicking?<br>What about the ratio of inputs to outputs?   |
| <i>Feedback literacy</i> | Is the feedback worded in an activating rather than a communicating way?<br>Is the learner considered an actor rather than just a recipient in the feedback process?<br>Does the feedback provide insight into what the learner has accomplished so far?<br>Does the feedback encourage action?<br>Does the feedback encourage reflection?<br>Is the feedback information useful?<br>Does the feedback offer recognition?<br>Is there follow-up on the feedback? |
| <i>Motivation</i>        | Does the material focus on learning rather than performance?<br>Is autonomy expected of the learner?<br>Is initiative expected of the learner?   |
| <i>Interactive</i>       | Is it visually engaging?<br>Are images or animation used?<br>Does it involve interaction?  |
| <i>Usability</i>         | Can the material be used at any point in the development process?<br>Can the material be used in any context? Is it generic?<br>Can the material be easily accessed?   |
| <i>Triple win</i>        | Does it produce anything meaningful for the learner?<br>Does it provide anything meaningful to the feedback giver from the training?<br>Does it provide anything meaningful to the feedback giver from the professional field?   |
| <i>No jargon</i>         | Is there follow-up on the feedback?<br>Are there any difficult words?<br>Is there vocational jargon involved?<br>Are there any sentences that are too long?<br>Is the content accessible to everyone?  |

## 4 CONCLUSIONS

Soft skill development is regarded to be crucial both in higher education as well as in the labour market. However, institutions for higher education are unsure how to diagnose, monitor, assess and support soft skill development. Existing research has demonstrated that a 360° approach in feedback provides a valid and reliable way of assessing skills and providing a focal point in skill development. The current project aims at designing a digital 360° environment for assessing soft skills and providing support materials for both students and teachers. In order to make this environment as relevant and user-friendly as possible, teachers were included in a needs analysis, as well as in the co-design of the initial prototype. The needs analysis was conducted using an online survey and seven focus group panels. The design of the prototype was carried out in so-called service design teams. The overall design of the research was framed by the model of Educational Design Research [9].

The needs analysis demonstrated that the importance of the sixteen included soft skills varied within the institution and across the different departments. Skills such as 'communication' or 'cooperation' received



a lot of attention regardless of department or program, while skills such as 'flexibility' or 'willingness to learn' received less attention and only in specific departments. Focus group panels pointed out that teachers struggle with both measuring soft skills objectively and supporting students in their soft skill development. The latter is often due to the type and availability of existing educational support materials. Service design teams were organised to draw up design guidelines and co-design educational materials on soft skill development. As a conclusion it can be stated that the online survey, focus group panels helped researchers and participants in the design teams get a better grasp on stakeholders' needs, resulting in more clear design guidelines and design priorities.

However, in reality it proved more difficult and time-consuming than expected to rework existing materials. In addition COVID regulations at the institution often necessitated switching to a digital format precluding efficient cooperation. Therefore for most skills, the design teams provided only a rough framework of materials, in need of further elaboration and reification by the researchers. Therefore it was decided by the researcher to further develop a prototype of a learning environment with four skills (planning and organizing, flexibility, willingness to learn and critical thinking) using input from the needs analysis and the service design teams. This design process is currently in progress, with the aim of finishing a working prototype in September 2022. Subsequently the prototype will be piloted in the institution, followed by a study on user experiences.

Although the research-project is still ongoing, preliminary conclusions point out that a participatory approach in designing (digital) educational materials is both relevant and valuable. An important pitfall in this approach remains the time-constraints imposed by the voluntary participation of teachers in time-consuming activities such as focus group panels and service design teams.

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