



# YESict

Project co-funded by the European Union



Erasmus+

## Report – Output 2

### Entrepreneurial Skills



GOI ESKOLA  
POLITEKNIKOA  
ESCUELA  
POLITECNICA  
SUPERIOR



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UNIVERSITY OF NICOSIA

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## 1. INTRODUCTION

As we have said more than once, the YESict project has as its principal objective the impulse of entrepreneurship and the entrepreneurial attitude among young students. The first step towards it has been to analyse what the concept means and how it is encouraged worldwide.

Indeed, the *Output 1 - Existing programs analysis* report provides a general understanding of the subject. Right now, it is time to go one step further and start defining the programme to be worked via the YESict project.

Nevertheless, before outlining the entrepreneurial curricula, it is necessary to specify more exactly what characteristics we are thinking about when we talk about entrepreneurship. We usually talk about skills and competencies, but do we really know what the difference between them is? More importantly, are we going to work skills or competencies within the designed programme?

Without a doubt, this report answers to all those questions, as well as it includes a dissertation about which skills should be fostered for urging entrepreneurship. Precisely, we have analysed and embraced some of the most important theories about entrepreneurial skills.

In summary, the report is divided in three sections that include: 1) Entrepreneurial skills -definition of the concept and analysis of entrepreneurial theories-; 2) Analysis of entrepreneurship programmes -the specification of the skills to be worked by the YESict project-; and 3) Conclusions and recommendations -the summary of the report and some advices for the Output 3-.

## 2. ENTREPRENEURIAL SKILLS

It is generally understood that the term "skill" refers to an ability and capacity acquired through intentional, systematic and substantial effort to carry out activities and reach pre-specified results, often under certain constraints (i.e. time and/or effort).

Skills may be distinguished into domain-general, like teamwork, leadership, etc., and domain-specific skills. For example, within a professional context, general skills would include time management, teamwork and leadership, whereas domain-specific skills relate closely to the specific function being performed.

Very often, skills are also classified as basic, transversal or technical. Basic skills are those thought to be necessary for active economic participation and social inclusion; transversal skills -although relevant to people's professional context- have been usually acquired through non work-related activities while technical skills are required for the successful accomplishment of a specific task and are acquired through a formal learning process, in most cases.

Skills are not to be confused with competencies. A competency is an amalgamation of practical and theoretical knowledge, cognitive skills, behaviour and values that provide a structured guide enabling the improved job performance within different situational contexts. To be competent, a person would need to be able to assess the situational context and make a sound decision as to which of the possible action plans would be the optimal results under given constraints. It is accepted that competencies would grow through experience and the learning capacity of the individual involved.

For the purposes of this study, we concentrate on skills and more specifically skills that are considered essential in the entrepreneurial context.

### 2.1. Definition and types of entrepreneurial skills

The term "entrepreneurial skills" is used in academia as well as in business, extensively; thus, it often refers to a different set of skills and conceptualizations. In an attempt to discuss this topic in a systematic way, we start by distinguishing entrepreneurial skills into two main classes, namely, cognitive-related skills that include, among others, opportunity identification, assessing business ideas, business development, value creation, venture set up and growth strategies, etc. and non-cognitive entrepreneurial skills that encompass skills like personal development, creativity, ideation, self-reliance, initiative taking, and translating ideas into action.

This classification mirrors the research on entrepreneurship that distinguishes two categories of factors influencing entrepreneurial orientation: personality-centric and intention-centric approaches. In the first research orientation, research focuses on entrepreneur's character traits and his/her motivations (Wanberg & Banas, 2000). In summary, definitive correlations between personality traits and specific entrepreneurial behaviour could not be established (Wanberg & Banas, 2000). Thus, the emphasis has been placed on the intention-based approach in an attempt to predict and shape

entrepreneurial behaviour and the so-called entrepreneurial mind-set. In this type of model, the intention moderates the influence of specific factors on actual behaviour (Ajzen, 1991), (Krueger, 2009).

During the last couple decades, economic sectors, at large, and entrepreneurship, in particular, have been transformed by fundamental innovative changes where elements such as information, knowledge and new technologies have gained importance and have become the main pillars of value adding activities. That also explains, partially, why technological innovation has become an area of growing interest within researchers and professionals alike.

It appears there is not a consensus about the skills and mechanisms influencing the process. However, some skills have been cited repeatedly including creativity (Ahuja & Thatcher, 2005); (Woodman, Sawyer, & Griffin, 1993), goal orientation (Dweck & Reppucci, 1973), technology self-efficacy (Bandura, 1977); (Friend, 1982); the influence of organizational factors such as management practices (Woodman, Sawyer, & Griffin, 1993); (Amabile, 1988), work environment (Woodman, Sawyer, & Griffin, 1993); (Gundry, Kickul, & Prather, 1994), innovation culture (Ekvall & Tangerberg-Anderson, 1986); (Ekvall, 1997) and technological culture (Bijker, 2006), as well as the impact of the expectations about getting an expected result (Vroom, 1964).

For the purposes of this project, we need to focus our attention on those aforementioned entrepreneurial skills that are relevant to the target age group of primary and early secondary education settings, as discussed in the following section.

## **2. 2. Entrepreneurship in education**

The *Output 1 – Existing programs analysis* report includes a subsection focusing on how entrepreneurship is taught in both formal and non-formal education. Just to keep it mind, we mention again Sexton and Kasarda's (1991) argumentation: the goals of entrepreneurship programmes are to prepare people for career success and to increase their capacity for future learning, considering also the learner's personal fulfilment and contribution to society.

From a formal educational perspective, all educational programmes aim to advance knowledge, skills and attitudes and entrepreneurial training is possibly one of the few that exemplifies the integration and combination of all three.

Nonetheless, in most formal education situations, knowledge on entrepreneurship is treated thoroughly and in an analytical manner; skills receive sketchy attention and it is harder to impart within formal educational systems where the addressing attitudes are hardly approached at all. It is, therefore, important to provide grounds for the advancement of factual knowledge combined with the development of skills and the stimulation of new ventures. In that way, the resolution of those endeavours and the increasing capacity of the entrepreneur will led to a path to pursue even greater success.

As we explained in the previously mentioned report, entrepreneurial skills are developed through formal education in three distinct educational approaches; education "about", "for" and "through" entrepreneurship. The "about" approach is scientifically

oriented and examines the phenomenon from a fact-finding perspective, i.e. Study the theories on women's entrepreneurship. Educational approaches "for" entrepreneurship develop domain specific skills i.e. how to develop a business canvas. Finally, the educational activities "through" entrepreneurship enables students to develop entrepreneurial cognitive or non-cognitive skills, i.e. through a new product development setup, learners develop their creativity. The latter is recommended for the purposes of this project.

Some important challenges have however been identified when trying to embed entrepreneurship into education this way, such as resource and time constraints, resistance from teachers, assessment challenges and cost implications (Smith & Hannon, 2006).

It is then important to identify in a nutshell those key skills that would be at the same time theoretically grounded, have greater acceptance from all involved stakeholders and can be developed by educational programmes in which it is not the ultimate goal, nor an enabling factor (that is, they belong neither to a "for" nor to an "about" category), but rather they are reinforced through an experiential learning process.

### **2.3. Key Skills**

To address the goal stated above, first, we have revisited the theories that advise us in our attempt to identify the key skills required in entrepreneurship and innovation. Continual Information Technology innovation (i.e. converting technology use into innovative processes and applications) is essential in this context (Ahuja & Thatcher, 2005).

We also include Woodman's model, a clear referent in this field (Ahuja & Thatcher, 2005), because its framework incorporates the two classes of factors influencing the innovation process: individuals and organizational setting.

Second, we have chosen Bandura's theory because self-efficacy has become a recognized influencer on entrepreneurship and Bandura a clear authority in this field (Biglan, 1987).

Third, we have included the goal orientation theory (Dweck & Reppucci, 1973) and beyond mostly-used motivation theories, we also examine as a fourth element the impact of self-efficacy and Vroom's expectancy theory to reflect upon utility/valence, instrumentality and expectations.

Finally, we have included the theory of trying as we consider that entrepreneurs do not control the outcome of their efforts, in most cases.

Table 1 summarizes the theories employed and the list of key factors derived by them.

Table 1. Theoretical Background [taken from (Leal, Esteves, & Guerra, 2012) with changes]

KEY SKILLS (supported by Theory)	RELEVANT PUBLICATIONS
<b>Creativity</b> (Woodmans' model)	(Woodman, Sawyer, & Griffin, 1993), (Ahuja & Thatcher, 2005)
<b>Self-Efficacy</b> (Bandura's Theory)	(Bandura, 1977)
<b>Learning G. O.</b> (Goal Orientation Theory)	(Dweck & Reppucci, 1973), (VandeWalle, 2001)
<b>Utility/Valence</b> (Vroom's Exp. Theory)	(Vroom, 1964), (Lewin, 1935), (Tolman, 1932), (Atkinson, 1964)
<b>Execution G. O.</b> (Goal Orientation Theory)	(Dweck & Reppucci, 1973), (VandeWalle, 2001)
<b>Management Practices</b> (Woodmans' model)	(Woodman, Sawyer, & Griffin, 1993), (Amabile, 1988)
<b>Work Environment</b> (Woodmans' model)	(Woodman, Sawyer, & Griffin, 1993), (Ahuja & Thatcher, 2005)
<b>Innovation Culture</b> (Woodmans' model)	(Ekvall & Tangerberg-Anderson, 1986), (Ekvall, 1997)
<b>Technological Culture</b> (Woodmans' model)	(La Rovere, 1996), (Bijker, 2006)
<b>Instrumentality</b> (Vroom's Exp. Theory)	(Vroom, 1964), (Tolman, 1932), (Atkinson, 1964)
<b>Expectations</b> (Vroom's Exp. Theory)	(Vroom, 1964), (Tolman, 1932), (Atkinson, 1964), (Nasri, 2012)
<b>IT Innovation</b> (Theory of Trying)	(Bagozzi & Warshaw, 1990), (Ahuja & Thatcher, 2005)

The literature suggests two relevant lenses for studying the attitude towards innovation and entrepreneurship: individuals' traits and organizational settings (Ahuja & Thatcher, 2005). Within the first direction, a critical factor is creativity, while in contrast, organizational factors, which may also assist the process, include company motivation to innovate and available resources - a factor that relates individual perceptions of these technologies to the perception of entrepreneurs on the competence they extend (Friend, 1982). The self-efficacy concept has been proposed (Bandura, 1977), whereas by self-efficacy, we refer to the perception each individual has about his or her own capacities and what he or she can do with them. Recent research suggests some additional factors, like learning and execution goal orientation, that refer to different patterns of how individuals understand and react to achievement situations. Motivation theories can also advise us on factors that create a motivational reinforcement (Nasri, 2012); (Vroom, 1964), namely the perceived valence or utility of the action's result will contribute to the motivation of the individual. More specifically, high expectancy for the desired outcome contributes positively to the motivation of the individual. Furthermore, an outcome that is of value to the individual is also positively related to his/her motivation.



### 3. ANALYSIS OF ENTREPRENEURSHIP PROGRAMMES

In order to narrow down to those skills that can be easily adopted by the subjects of this study, we have focused our attention at the primary and lower secondary levels of education entrepreneurship in formal and informal education.

Formal education **for** or **about** entrepreneurship is uncommon at the level of primary and lower secondary education. A major contributing factor to this is the focus of this type of education on cognitive-oriented entrepreneurial skills; this is perceived as having very low priority for this type of student, as he/she is still far away from the labour market. Education **through** entrepreneurship has, however, increased in popularity (Jones & Iredale, 2010) and its focus on non-cognitive entrepreneurial skills is well in line with the learning goals of most countries.

We have identified a number of relevant interventions at educational programmes, e.g., (Hale, 1998); (Van der Kuip & Verheul, 2003); (Lewis & Massey, 2003). By examining such initiatives, it seems that generic topics including but not limited to risk-taking, creativity, innovation, initiative, opportunity seeking, goal setting, self-confidence, persistence, need for achievement, responsibility etc. are recurring characteristics in many of these writings.

At large, programmes in primary and early secondary education systems play a pivotal role in predicting and developing entrepreneurial traits. The underlying assumption for such curricula is that entrepreneurship knowledge and skills can be learned or at least positively influenced (Johannisson, Landstrom, & Rosenberg, 1998).

Central issues in such endeavours address the questions related to "why", "how" and "what" entrepreneurial skills are to be included in the curricula. Although the "why" has been addressed more explicitly in outcome O1, let us restate that besides the utilitarian aspects explicitly associated with entrepreneurial skills for the young learners themselves, recent research points towards the development of multifaceted connections between the school units involved in such curricula and the surrounding communities. It has been noted that through entrepreneurial activities the school opens towards society and this interaction with its surrounding community may lead the development of the school as well as the local community (Johannisson, 2000).

With regards to the "how" aspect, action-based learning activities are overwhelmingly proposed as it will be detailed in output O3. Currently, for the purposes of completeness of this report it is sufficient to point out that although theory is seen as important, many studies stress the need for practice and the training of skills. Emphasis is placed not only on the learning context but on learning through the so-called action-oriented learning model. The action aspect is further also linked to Dewey's "learning by doing" and Schön's "reflective practitioner". For Johannisson entrepreneurship is "action learning". Learning processes are related to learning in different contexts and presuppose activity and active learners. However, the concepts of entrepreneurship and enterprise are not only limited to the teaching and learning processes inside the school. Learning processes are placed in a

wider context, exceeding the walls of the school building, and placed in other situations. The ideas of an exchange of experiences between firms and other actors in society, described earlier, are also applied in an educational context.

Finally, with regards to "what" content that is to be included in the curricula targeting this age group, learning activities that encourage autonomy and independence, innovation and creativity, as well as risk-taking, are often considered as the factors that enable children to make decisions and to accept mistakes as part of the learning process (Ibrahim & Sufani, 2002, p. 427).

### 3. 1. Selection of entrepreneurial skills for the YESict project

The last part of this section provides the top-10 entrepreneurial skills that are considered appropriate for the purposes of this project. It is interesting to point out that these traits have been identified early on in the relevant literature and although the means of developing the skills have undergone a significant transformation over the years, the skills as such seem to resurface over time. For methodological purposes, we trace back the proposed skills to the researchers who first proposed them (to the best of our knowledge). The order in which they appear is random. Skills that seem to be essential are discussed more thoroughly.

1. **Achievement motivation** has been characterized as the tendency to set challenging goals and strive after these goals through own effort (McClelland, 1961). McClelland (1965) argues that a high need for achievement drives people to become entrepreneurs. According to Kourilsky (1980, p. 182) achievement motivation "is reflected in a student's seeking of recognition for and overt exhibition of his/her performance abilities and skills".
2. **Need for autonomy** has been referred to as the desire to be in control (and a fear of external control). People with a high need for autonomy consider individualism and freedom important, and are averse to rules, procedures and social norms (Kirby, 2003). They want to be independent of others.
3. **Creativity** has been described as "developing new methods instead of using standard procedures" (Born & Altink, 1996, p. 72). In the literature, a distinction can be made between four main components of creativity:
  - a. *fluency*, the ability to produce a large number of ideas (quantity);
  - b. *originality*, the ability to produce new and unusual ideas (quality);
  - c. *flexibility*, the ability to change between approaches; and
  - d. *innovation*, the ability to (re)define and perceive in an atypical manner.

A distinction can also be made between inventing something new (i.e., creativity) and adopting it (i.e., innovation). In the relevant literature, the creativity aspect has been frequently identified not only as a quality closely related to entrepreneurship but also as an underlying enabling factor for other entrepreneurial skills (Crowley, Hisrich, Lankford, & B., 1995); (Herron, Smith-Cook, & Sapienza, 1992); (Gundry & Kickul, 1996); (Whiting, 1988). According to Hull, Bosley and Udell (1980) creativity (together with risk taking attitude) is a better indicator of venture initiation than achievement motivation and internal locus of control.

4. **Undertaking initiatives** has been defined as "the motivation to begin work independently, to take the first step, to be adventurous, and to be willing to try new methods" (Kourilsky, 1980, p. 182). Born and Altink (1996, p. 72) concisely define initiative as "undertaking business of one's own accord".
5. **Risk taking** refers to the acceptance of risk in undertaking an entrepreneurial initiative; in essence realizing the prospect of an unsuccessful outcome of an endeavour that is usually associated with some negative implications (Kourilsky, 1980); (Kirby, 2003, p. 112). McClelland (1961) argues that risk taking should be moderate or calculated and dependent upon acquired skills rather than chance.
6. **Opportunity seeking** or **recognition** involves the search for or the identification of unsatisfied wants and needs in the marketplace that can be met by introducing a (new) product or service (Kourilsky, 1995).
7. **Goal setting** refers to identify how the expected entrepreneurial initiative can be decomposed into a set of more concrete and measurable objectives that can be reached by allocating time and effort of the entrepreneurial team. Entrepreneurship is concerned with attaining goals creatively and autonomously, but also being able to validate the completion of each objective at a minimum satisfactory level.
8. **Self-awareness** refers to the development of reflective realization of one's own abilities that are relevant to the undertaking of an entrepreneurial undertaking (Lawler, 1973). An entrepreneurial individual initiates and undertakes actions independently. In this context, it can be argued that in addition to adequately assessing one's own capabilities a belief in one's own actions, i.e., self-confidence, is important.
9. **Internal locus of control** is the degree to which an individual believes that reinforcements are dependent upon his or her own behaviour (Rotter, 1966). An individual who believes that the achievement of an end or goal is dependent upon his/her own ability and actions is characterized by an internal locus of control, whereas an individual who believes that it is the result of luck or other people's efforts is characterized by an external locus of control.
10. **Persistence** has been defined as "the proclivity [...] to stick to a task until it is completed" (Kourilsky, 1980, p. 182). It may be argued that the persistence with which an individual pursues a certain goal is largely dependent upon motivation, energy and commitment. Perseverance and persistence are viewed as synonyms in the light of the present study. Although in the entrepreneurship literature it is often argued that many of these qualities are interrelated (McClelland, Atkinson, Clark, & Lowell, 1953); (McClelland, 1961) it is unclear how these qualities are related and what the implications are of the various interrelationships for teaching entrepreneurial qualities. Teaching entrepreneurial qualities may generate spill over effects in case the taught qualities are related to other qualities. For purposes of simplicity, the present study will deal with the qualities separately.

From the discussion above, it is clear that some skills (i.e. creativity) are associated with subjects in primary education settings, whereas some others (self-awareness and persistence) are not and are more likely to be reinforced in secondary education

environments. For that, it is interesting to have again at this point the distribution of entrepreneurial skills as developed in various curricula by age group (see Table 2).

Table 2. Skills developed on the analysed educational models and the age to which they are targeted

	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	+
Adapt	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Creativity and innovative spirit</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Entrepreneurial attitude/thinking</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Financial education	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Problem solving	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Setting goals/objectives</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Social responsibility	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Technical concepts (marketing, advertising, finance...)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Money Management	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Planning	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Teamwork	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Self-confidence/Self-esteem</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Decision making	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Attention span	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Individual skills appreciation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Search for new opportunities</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Taking risks</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Personal skills (solidarity, autonomy...)</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Leadership	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Identify business opportunities	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ability to speak in public	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Culture of innovation and entrepreneurship	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Emotional and social intelligence	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Initiative</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Critical thinking	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Collaboration	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Communication	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Competition	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Business Ethics	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Developing ideas and businesses	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Motivation</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Strategic concepts application	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Finally, it is worth pointing that we have conducted a number of interviews with interested stakeholders (entrepreneurship and IT educators, entrepreneurs and policy makers) to validate whether the results from the literature are still relevant from their different perspectives. It is worth noting that although each one of them referred a subset of the skills identified above, none has mentioned a skill that cannot be traced to the list above. This gives us the confidence to conclude this part and derive the following conclusions.

## 4. CONCLUSIONS AND RECOMMENDATIONS

This report aims to provide a thorough analysis on the main topic of entrepreneurial skills, as well as informed recommendations for Output 3 – Entrepreneurship curricula. More specifically, it provided:

- a clear distinction between skills that can be acquired and competencies that are developed;
- a categorization of entrepreneurial skills development settings; and
- identification of entrepreneurial key skills.

Furthermore, it also completes the recommendations gathered together in the Output 1, mostly regarding the entrepreneurial skills selected within the YESict project.

### **Skills or competencies?**

Through this report it has become clear the difference between skills and competencies. Skills are acquired through intentional, systematic and substantial effort to carry out specific activities so that an expected result is achieved. Competencies are developed over time and they are based on acquired skills combined with theoretical knowledge, and exercised in different settings. Overtime, competencies are a strong indicator of improved performance.

As stated before, for the purposes of this study, we have decided to concentrate on **skills** and more specifically on the ones that are considered essential in the entrepreneurial context.

### **Categories of Entrepreneurial Skills**

As we have more than once explained, entrepreneurial skills are developed through formal education in three distinct educational approaches; education “about”, “for” and “through” entrepreneurship.

Finally, it has been decided to favour the **education “through” entrepreneurship** for the purposes of this project, just to reinforce the key skills through an experiential learning process.

### **Key Entrepreneurial Skills**

In regard to the skills to be strengthen through the YESict methodology; in the first Output we outlined some that have again appeared in this study. These skills are related to personal skills such as autonomy and self-awareness, and others like creativity.

The rest are related to specific entrepreneurial skills associated with the project management (e.g. goal setting); entrepreneurial skills (e.g. undertaking initiatives, risk taking, opportunity seeking and perseverance/persistence) and personal skills (e.g. motivation and internal locus of control).

In conclusion, based on extensive literature review, we have derived a list of **10 key entrepreneurial skills**, including:

1. Motivation for achievements
2. Autonomous action
3. Creativity
4. Undertaking initiatives
5. Risk taking
6. Opportunity seeking
7. Goal setting
8. Self-awareness
9. Internal locus of control
10. Perseverance / persistence

In this outcome, we have verified the age to which are addressed those skills, concluding that they are mostly relevant to different age groups.

Moreover, those skills have been validated by different stakeholders such as entrepreneurship and IT educators, entrepreneurs and policy makers.

The curricula to be developed in the following work package should concentrate on the intersection of the top 10 skills with those skills that are usually developed in the age groups of interest for this project. The resulting list should be fine-tuned and finalized by the partners of this project.

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