



Twenty-first century digital skills for the creative industries workforce: Perspectives from industry experts
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Abstract

The creative industries workforce requires employees that use ICT applications to solve the knowledge related tasks at work. The aim of this research is twofold: (1) to see if previously cited twenty-first century digital skills are suited to the creative industries workforce and (2) to investigate the extent to which skill development get attention in current organizational practices. In-depth interviews were conducted with a sample of 24 managers and senior executives of creative organizations based in the Netherlands. As a guideline for the interviews, a conceptual twenty-first century digital skills framework was used. This framework presented the following seven core skills supported by the use of ICT: technical, information management, communication, collaboration, creativity, critical thinking, and problem solving. The following five contextual skills that play a role when using ICT were also presented: ethical awareness, cultural awareness, flexibility, self-direction, and lifelong learning. The results support the importance of twenty-first century digital skills, however, there seems to be insufficient attention to the levels of these skills; they play a minor role during the selection and evaluation procedures. Often it is assumed that existing digital skills are sufficient. Managers are encouraged to improve on developing requirements necessary for future employees as well as measurements to ensure current employees skill levels. The developed framework might be used as a management tool for indicating skills that need to be assessed among professionals working in the creative industries.

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1. Introduction

By improving access to services, enhancing connectivity, and changing the ways in which people communicate, interact, and engage with one another, information and communication technologies (ICTs) have become a central contributor to social transformation. ICT furthermore supports economic growth by generating business and employment opportunities. In this respect, human capital is a critical asset, as employees create a strong base for innovative and competitive power. The ability to manage human capital and its conversion into useful 'product' is considered the most critical management skill, providing the ultimate in competitive edge (More, 1999). The human capital that resides within the workforce influences the various innovative capabilities of organizations (Santos-Rodrigues, *et al.*, 2010; Singh, 2012). ICT use by organizations increases revenue growth, workplace productivity, and competitiveness while fostering innovation and employment throughout the economy. As a result, digital skills are not only vital to participating in the knowledge society (van Deursen and van Dijk, 2011), they have also become a key element for facilitating employment

opportunities (Gómez, *et al.*, 2014). The rapid integration of new ICTs has meant that continuously evolving skills are needed to deploy such technologies (Ananiadou and Claro, 2009; Janssen, *et al.*, 2013). Employees not only require better technical skills, but also excellent skills in adapting to changing job requirements (Carnevale and Smith, 2013; Wilson, *et al.*, 2015). The skills needed for navigating contemporary education and the workplace have been labeled twenty-first century skills (Greiff, *et al.*, 2015; Griffin, *et al.*, 2012). The current workplace requires employees who can research and structure information by applying critical thinking skills, can resolve problems using their own knowledge and experience, are creative innovators, and exhibit effective communication and cooperation abilities (Boyaci and Atalay, 2016). Several concepts refer to skills required in knowledge environments but only a few approaches provide an integration of digital and twenty-first century skills. To clarify conceptual indistinctions, van Laar, *et al.* (2017) conducted a systematic literature review to synthesize the relevant academic literature concerned with twenty-first century skills and digital skills. Their review resulted in the formation of a comprehensive framework based on seven core (technical, information management, communication, collaboration, creativity, critical thinking, and problem solving), and five contextual twenty-first century digital skills (ethical awareness, cultural awareness, flexibility, self-direction, and lifelong learning).

This study takes an in-depth look at managers' and senior executives' perspectives on twenty-first century digital skills necessary for the creative industries workforce. The development of individual skills is relevant in industries where digitalization changes the way products and services are developed, manufactured, distributed, and consumed (Goldkind and Wolf, 2014). It is important to study whether managers pay enough attention to employees' human capital in contemporary organizational practice. Since employees are considered the most important sources for innovation, the need for managers to account for the skill of their employees is vital. Individual skills are seen as the source for new product and service developments (Hotho and Champion, 2011; Preston, *et al.*, 2009). However, concerning the creative industries only a few studies, especially in management literature, discuss individual skills (Kamprath and Mietzner, 2015). To get a better insight in the role of skill development, interviews are conducted with managers and senior executives responsible for skill development of creative organizations based in the Netherlands. In this study, individual's skills are discussed with the general purpose to further strengthen the creative industries. Four research questions guide this study:

1. Which skills do managers and senior executives of the creative industries mention as meaningful for the current workforce?
2. Which twenty-first century skills do managers and senior executives of the creative industries view as being most relevant for the current workforce?
3. To what extent do managers and senior executives of the creative industries consider twenty-first century skills in application procedures and performance evaluations?
4. To what extent do managers and senior executives of the creative industries recognize the role of ICTs in reference to twenty-first century skills?

By answering these questions, this study serves as a guideline for which twenty-first century digital skills are needed in the current creative industries workforce. To the best of our knowledge, this is the first in-depth qualitative study exploring the views of managers and senior executives concerning twenty-first century digital skills. In addition, it shows the role skills development plays in current organizational practices. The results are particularly useful for managers of the creative industries responsible for hiring qualified personnel.



2. Theoretical background

This section overviews the twenty-first century digital skills that can be considered essential for the workforce within the creative industries.

2.1. Twenty-first century skills

Prominent frameworks that promote and discuss twenty-first century skills cover skills related to the use of ICTs, collaboration and communication, creativity, critical thinking, problem solving, being productive, and acting in a socially and culturally responsible manner (Dede, 2010; Ferrari, *et al.*, 2012; Voogt and Roblin, 2012). From an educational perspective, a variety of groups and organizations have developed frameworks that describe twenty-first century skills that students should have acquired. The Partnership for the Twenty-First Century (P21) (2008) lists three types of skills: learning (creativity and innovation, critical thinking and problem solving, communication and collaboration), literacy (information, media and ICT literacy), and life skills (flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility).

The P21 was developed with input from teachers, education experts, and business leaders to define a vision for twenty-first century education to in turn ensure that students succeed as citizens and workers of the twenty-first century. Similarly, the Assessing and Teaching of Twenty-First Century Skills (ATC21S) group consulted an expert panel to define key twenty-first century skills (Binkley, *et al.*, 2012). The group organized twenty-first century skills as follows: Ways of Thinking (creativity and innovation; critical thinking, problem solving, and decision making; learning to learn and metacognition), Ways of Working (communication, collaboration, and teamwork), Tools for Working (information literacy, information technology, and communication literacy), and Living in the World (life and career, personal and social responsibility). In general, the focus of twenty-first century skills is to ensure that students master twenty-first century skills in preparation for working life.

2.2. From twenty-first century skills to twenty-first century digital skills

Overall, twenty-first century skills cover a broad spectrum of knowledge-related skills besides more ICT or digital related skill aspects (*e.g.*, ICT skills). Only a few approaches integrate the digital component with knowledge-related skills. Ng (2012), for example, distinguished between technical, cognitive, and social-emotional dimensions of digital literacy. Comparably, Eshet-Alkalai (2004) argued that digital literacy should include skills such as photo-visual, reproduction, branching, information, and socioemotional literacy. These authors go beyond operating digital devices and stress cognitive and social-emotional skills as necessary to performing tasks and solving problems in digital environments. Moreover, van Deursen and van Dijk (2010) drew distinctions between medium-related skills (operational and formal digital skills) and content-related skills (information and strategic digital skills). Recently, van Deursen, *et al.* (2016) completed this framework by adding communication and content creation skills measurements. They stress the conditional nature of such skills and state that a person without mastery of basic skills will not be able to exhibit content-related skills.

There is a need to shift focus from technical mastery to the identification of knowledge- or content-related skills in the use of technologies (*e.g.*, Ahmad, *et al.*, 2013; Claro, *et al.*, 2012). Basic skills needed to use the Internet and skills required to comprehend and use online content must be accounted for. In the present study, twenty-first century digital skills are interpreted as a multi-layered unit of twenty-first century skills in which digital skills are integrated. The essence is what employees can do with ICTs to support the broad spectrum of twenty-first century skills and in turn take full advantage of ICTs. Van Laar, *et al.* (2017) presented a twenty-first century digital skills framework used as a guideline in this study. They identified seven core skills (technical, information management, communication, collaboration, creativity, critical thinking, and problem solving) and five contextual skills (ethical awareness, cultural awareness, flexibility, self-direction, and lifelong learning). The twelve skills stress the digital aspect by placing emphasis on 'the use of ICTs' (core skills) and 'when using ICTs' (contextual skills). See [Table 1](#).

Core skills	Conceptual definition
Technical	The skills to use (mobile) devices and applications to accomplish practical tasks and recognize specific online environments to navigate and maintain orientation.
Information management	The skills to use ICT to efficiently search, select, organize information to make informed decisions about the most suitable sources of information for a given task.
Communication	The skills to use ICT to transmit information to others, ensuring that the meaning is expressed effectively.
Collaboration	The skills to use ICT to develop a social network and work in a team to exchange information, negotiate agreements, and make decisions with mutual respect for each other towards achieving a common goal.

Creativity	The skills to use ICT to generate new or previously unknown ideas, or treat familiar ideas in a new way and transform such ideas into a product, service or process that is recognized as novel within a particular domain.
Critical thinking	The skills to use ICT to make informed judgements and choices about obtained information and communication using reflective reasoning and sufficient evidence to support the claims.
Problem solving	The skills to use ICT to cognitively process and understand a problem situation in combination with the active use of knowledge to find a solution to a problem.
Contextual skills	
Ethical awareness	The skills to behave in a socially responsible way, demonstrating awareness and knowledge of legal and ethical aspects when using ICT.
Cultural awareness	The skills to show cultural understanding and respect other cultures when using ICT.
Flexibility	The skills to adapt one's thinking, attitude, or behavior to changing ICT environments.
Self-direction	The skills to set goals for yourself and manage progression toward reaching those goals in order to assess your own progress when using ICT.
Lifelong learning	The skills to constantly explore new opportunities when using ICT that can be integrated into an environment to continually improve one's capabilities.

2.3. Twenty-first century digital skills in the creative industries

In general, most theorist have defined creativity in the workplace as the development of ideas about products, services, or procedures that are novel and potentially useful to the organization (e.g., Amabile, *et al.*, 1996; Shalley, *et al.*, 2000; Woodman, *et al.*, 1993). Organizations in the creative industries focus on goods and services that exploit intellectual property and creativity (Flew and Cunningham, 2010). The creative industries remain a contested concept in terms of the specific disciplines that belong to the sector. The general consensus is that it includes performing arts (e.g., visual arts/crafts, theatre, music, literature) as well as those that are more commercial (e.g., design, media, software, and publishing/advertising), all of which have creativity at their core (Hartley, 2015).

Furthermore, the creative industries workforce is distinctive from more conventional industries such as financial services or manufacturing because it is dominated by a high number of small-to-medium enterprises and work is often freelance or performed on a short-term contractual basis (Bridgstock, 2011). Uncertainty is deeply embedded into the nature of the creative industries, characterized by rapid technological changes where constantly new and complex knowledge is created and demanded and where underlying competences are needed to improve the skills permanently (Kamprath and Mietzner, 2015). The creative industries are at the forefront of applying new technologies and are described as innovative and as state of the art in terms of adopting ICTs. The strong economic position of the creative industries, together with the potential for further economic growth, led the Dutch government to name

the creative industries a “top sector” (Hennekam and Bennett, 2017). Müller, *et al.* (2009) listed the three roles of creative industries in shaping an economy’s innovation performance: (1) they are a major source of innovative ideas and thus contribute to an economy’s innovative potential and to the generation of new products and services; (2) they offer services that may serve as inputs to innovative activities outside of organizations; and, (3) they are intensive users of technology and often demand adaptations and new developments of technology, providing innovation opportunities to technology producers. All creative industries are similar in that creative professionals are their most important asset (Bridgstock, 2011; Mietzner and Kamprath, 2013). They rely on creative professionals whose individual creativity is a key asset in responding to external changes and trends (Preston, *et al.*, 2009). In addition, Bilton and Leary (2002) argue that successful managers of creativity add value to the creative process by their ability to match individual employees to appropriate organizational tasks.

Because workers in the creative industries are intensive users of technology, technical skills are a first requirement to perform well. As a result, most studies concentrate on these skills, while the softer employee skills tend to be overlooked. Yet, the latter are required to develop the necessary innovation capabilities to handle technological and organizational changes at work (Kamprath and Mietzner, 2015). Mietzner and Kamprath (2013) studied how the digital transformation process has an impact on the working conditions and skills from the perspective of professionals working in the creative industries. Four major skill-shifts emerged: working interdisciplinary; having an open mind about the new; permanently transforming job-specific knowledge; and balancing between a specialist and generalist attitude. Referring back to the framework of twenty-first century digital skills, working in interdisciplinary teams demands considerable communication and collaboration skills from each member (Jeffcutt and Pratt, 2002). Having an open mind about the new means that workers should be able to respond to changes with flexibility, rather than perceiving them as a threat. This requires self-reflection on one’s own actions, openness to change, and taking the initiative to create opportunities. The permanent transformation of job-specific knowledge requires professionals working in the creative industries to explore new opportunities, elaborate on new developments, and be creative. Finally, it is about the balance between specialists and generalists; a generalist has a basic understanding across many disciplines while a specialist is a person who has a deep understanding of a specific discipline. As a consequence, the generalist is proficient in defining the problem and the specialist has the skills to solve the problem. Furthermore, in the creative industries the degree of specialization is high which means employers need specialists who can apply their knowledge. In fields where the degree of specialization is high, learning-by-doing is common practice to improve one’s skills (Jeffcutt and Pratt, 2002).



3. Method

Although current research had some inclination of which twenty-first century digital skills are needed in the creative industries workforce, a related framework has to our knowledge never been examined among the workforce. This research paper adopted a qualitative research design and conducted in-depth, semi-structured interviews. Interviews were conducted with managers and senior executives of the creative industries to develop deeper insight into the importance of various twenty-first century digital skills held by professionals working in the creative industries.

3.1. Semi-structured interviews

Semi-structured interviews were applied as a suitable method, as this research had a framework of themes to be explored. In addition, our semi-structured interviews were explorative, allowing new ideas to be brought up in the interviews based on what each interviewee said (Longhurst, 2010). Open questions ensured stimulation for new insights and perspectives.

3.2. Participants

Participants were selected using purposive sampling method. Participants had to meet two selection criteria: holding a supervisor role, as we assumed that those employees are most likely to have an overall view of the industry, and covering a range of organizations which are concerned with the creative industries. Participants were screened by LinkedIn and if suitable received an invitation by an e-mail message. Moreover, snowball sampling was used by asking the interviewees to propose another representative of the creative industries. We interviewed experts with first-hand knowledge of industry developments or personnel responsibility. In total, 24 managers and other senior executives of creative organizations based in the Netherlands were interviewed (33.3 percent female). Among these were working professionals/managers ($N=10$), directors/owners ($N=8$), recruiters/HR-managers ($N=3$), and

board members ($N=3$). Participants working in the following fields were included: advertising, architecture, cultural and art, creative branch organizations, fashion, gaming, graphic design, industrial design, journalism, museum, music, new media, and publishing.

3.3. Procedure

Prior to the interviews, informed consent was obtained from the participants whereby consent to being interviewed and audio recorded was established verbally. Furthermore, it was clearly stated that the interview data and results would be handled confidentially. To start each conversation, each participant was asked to describe his or her organization and the job activities that he or she performs. To receive a first-hand account of managers' views on the spectrum of skills referenced, participants were asked to describe skills that they viewed as being the most essential to creative job functions. Furthermore, participants were asked which of the stated skills are the most critical. An inductive approach was adopted to determine what the participants brought to the study, and code themes were derived from the raw data itself (Friese, 2014). Next, we examined how the participants viewed the presented twenty-first century skills. The twenty-first century digital skills framework from van Laar, *et al.*, (2017) was used as a guideline. Skills were presented by presenting a card with each skill written on it with a short description. The participants were then asked if they recognized the skills as relevant to creative professionals. For each skill, participants were required to explain why it is relevant (or not). A deductive approach was used to determine how the participants viewed the theoretical construct that the researcher was studying, so the code themes were derived from existing data as the researchers referred to their own framework (Friese, 2014). The participants were also asked what they expect from creative professionals with respect to twenty-first century skills and what has been asked for or tested in application procedures or performance evaluations. While descriptions given prior to this point were not focused on digital aspects or e-aspects of twenty-first century skills, by the end of the interviews, participants were required to determine whether ICTs offer additional value in terms of the proposed skills and to provide examples of digital tools that they use in their work activities. Finally, a broader question was asked concerning challenges to be faced by creative professionals and creative industries over the next five years. The interviews lasted between 60 and 90 minutes.

3.4. Data analysis procedure

All of the interviews were transcribed verbatim and were analyzed with the help of ATLAS.ti. As our study was explorative, we applied a grounded theory approach based on an open coding system. The only predefined coding themes used were related to the twenty-first century digital skills. The other coding themes used were based on the content of the data. A multi-step content-analytic procedure was used to draw descriptive or explanatory conclusions clustered by theme. The main researcher initially divided the transcriptions into meaningful units of analysis that were then interpreted as a whole and were related to one another, forming a codebook. The second coder used this codebook to code the sub sample of transcriptions. A Cohen's kappa value of .72 was achieved, denoting good agreement between the coders. After the coding session, all disagreements were resolved through discussion.



4. Results

4.1. Relevant skills from the perspective of the industry experts

The results show that technical skills were most often cited as skills to take into consideration. Thereafter, creativity, communication, collaboration, and analytical skills were presented as skills that are useful to the creative professional. Technical skills were not only viewed as basic practical skills, but also as an understanding of how things work from the back-end.

"With craft skills, I strongly mean the digital aspects. Can you work with Photoshop? Can you work in 3D? Can you make an animation? Do you understand all computer terms and concepts in order to make computers accessible for you? (...) So it has to do with vocabulary and of course understanding the logic of a computer."

Creativity was described as the effective management of ideas and as the execution of successful ideas. Idea generalization was considered as a precondition:

"You need to have imagination; otherwise, you can accomplish nothing in this world."

However, participants often stated that while there is no shortage of ideas, there is a lack of successful idea implementation.

"Everyone has ideas, but to execute them, you know. Executing them is really difficult. (...) To give a concrete example: there are a lot of young people who think about a cool Web site or fun app, yet, there are only few ICT-skilled people who can actually develop these at the back-end."

Open and transparent communication was viewed as crucial, mainly because when several aspects are being developed, it is necessary for employees to inform one another on the progress being made. Collaboration skills were viewed as important, as creative work is complex and multidisciplinary, and professionals must work together to ensure results.

"As a creative person you have to be able to work together with other disciplines. Especially to ensure your creative output has maximum impact. (...) How strong you are as a creative person has to do with your ability to convince other disciplines about the way you meant it."

Analytical skills were viewed as critical, as many problems are faced throughout project execution, and it is thus necessary to find solutions. Based on participants' explanations, analytical skills referred to problem-solving skills.

"When you have a preliminary design, you must be able to analyze what is required for this design to work well."

In addition to the framework, entrepreneurship was viewed as a meaningful skill, as it is either necessary to translate market needs into an idea or to make the market ready for your idea. Entrepreneurial skills were described as useful for not only conceptualizing ideas but also for finalizing products and the creative process.

"In the end it is about connecting your ideas to the market and vice versa. Sometimes this process starts in the middle. The fun thing is that this is not that black or white."

Participants found it hard to come up with an overview of skills that they considered as crucial for their employees. Overall, meaningful skills that the participants described are in line with those listed in the twenty-first century digital skills framework.

4.2. Twenty-first century skills

Most of the participants stated that twenty-first century skills are relevant for a creative professional and that they definitely shape their work activities. Clearly, the participants acknowledged these skills, and we thus asked that they specify levels of importance. A key to success in the creative industries is the ability to conceptualize and realize ideas. Therefore, technical skills and creativity were viewed as crucial.

"Look, we are not a banking company where we search for a creative brain. We are a creative company."

Additionally, problem solving, collaboration, and communication were viewed as necessary. Problem solving because when an idea does not work as expected, it is necessary to find a solution. Communication as each discipline comes with its own vocabulary that one must know to understand others in the field, and because it is about informing each other about the progress being made and future directions.

"It is about open and transparent communication to each other. I think this is important because there is so much development you have to communicate with your people and employees about where we are going and what are the next steps to take."

Finally, collaboration was considered pivotal, as in a multidisciplinary industry the creative process involves working together to ensure results.

"We constantly try to bring the right people together so you have more brainpower to solve problems."

The participants viewed ethical awareness, cultural awareness, information management, and lifelong learning as less important. As an explanation for their negative responses on ethical and cultural awareness, participants noted that such skills do not determine the success of a creative professional.

"I don't think it is important for creativity. (...) I think it is not a driver. It is a thing which can be an inspiration, but because I like sustainability it doesn't mean I am a creative person. I can be a

creative person who wants to work with sustainability, but the creativity comes first."

With regard to self-direction, it was argued that this skill is dependent on the occupational level of an employee. With regard to information management, participants stated that this is a generic skill that everyone must possess and that it is not specifically pivotal for creative professionals. Finally, lifelong learning was viewed as a skill that is not necessarily unique to the current timeframe and as a natural desire shared among creative professionals.

"I don't think that's important. For creative people it is not about lifelong learning. Creative people do it anyway. (...) It is a natural desire to learn."

4.3. The role of twenty-first century skills in application procedures and performance evaluations

According to the participants' self-reports, most twenty-first century skills are taken into consideration in job interviews. However, it was noted that such skills are difficult to measure and that decisions are often made based on a professional's portfolio of past work.

"How could you measure that in an interview? Yeah well you can see it in their work right away. You can see whether they talk about their work with passion."

The participants were divided on whether to test employee performance or not.

"That's a difficult one because we are not HRM people. We are not good at that."

"You have to think about goals and deliverables agreed upon with their managers. Every six months, their performance towards such goals is assessed."

It was stated that this should depend on an organization's scale and on whether an organization has enough resources to conduct such large-scale assessments. When participants stated that they used performance evaluations, these evaluations were always conducted during annual performance appraisals. A few participants also stated that they had insufficient knowledge to answer this question.

4.4. The digital aspect in twenty-first century skills

Next, participants were asked to describe the role of digital tools in twenty-first century skills. First, a more generic question regarding the role of ICTs and the Internet was asked, as participants found it difficult to elaborate on digital issues. The participants suggested that to ensure one's professional development, new digital skills must be learned. They regarded ICTs and the Internet as digital instruments and tools that one must learn how to use.

"Digital resources create opportunities to explore new territories and to think of new types of solutions."

However, critical comments were made on the limitations of digital tools. A few participants argued that searching for available digital opportunities alone restricts one's creative thought.

"What you often see is that there are so many digital tools that these tools define your design space."

Overall, most of the participants acknowledged the supportive functions of digital tools as part of the production process, but they were not viewed as tools for improving one's own skills. Furthermore, participants were asked to list digital tools that they use in their work activities. They referred to generic tools (e.g., Google, Skype, social media, YouTube) and to job-specific tools (e.g., 3D, Adobe, and Agile). Roles of digital tools that were most frequently mentioned included communication, collaboration, problem solving, and information management skills. Although the roles of digital tools for those skills were acknowledged, participants exhibited difficulties identifying digital aspects. They rarely identified uses of ICTs for twenty-first century skills. In addition, with the exception of lifelong learning, contextual skills were underrepresented. While the digital aspect of contextual skills is included in the framework, for the participants, it was problematic to grasp. They often referred to software packages and to technical abilities.

Several of the participants stated that it is the responsibility of the employee and not that of the organization to remain up to date.

"Learning on the job accounts for about eighty percent of how someone develops. Especially because we are so busy. (...) I do think we need to keep an eye on it."

Again, most of the participants described lifelong learning in terms of developing one's technical skills and did not deviate from describing technical abilities.

4.5. Challenges faced by the industry and professionals

Finally, participants were asked to describe challenges facing creative professionals and creative industries. Participants often stated that the main challenge facing the industry pertains to the fact that organizations from outside the industry recognize their creative potential.

"Within the creative industries people do understand the added value of creativity, while outside the industry this instantly stops. (...) All people acknowledge brilliant ideas, but are not willing to pay for it. (...) They think they could come up with these ideas themselves. Well that's the difference, they couldn't have thought about that."

Challenges facing creative professionals were related to their skills: keeping one's skills up to date, technical skills needed to realize creative ideas, and the expansion of one's own skills.

"You should always make sure that you are state of the art."



5. Discussion

5.1. Main findings

Our first objective was to identify the skills that managers and senior executives working in the creative industries consider meaningful. Although creativity, communication, collaboration, problem solving, flexibility, self-direction, and information management skills were considered, technical skills stood out in terms of importance, stressing the technological deterministic viewpoint of skills — the idea that when technical skills are mastered, people are able to cope with new technologies. Since the participants appeared to have difficulties with mentioning more content-related skills, it is likely that the skill requirements for professionals working in the creative industries are not top of mind. Worrysome, because managers have a responsibility to lead their employees successfully by identifying specific requirements in the form of knowledge, skills, and personal attributes for each role so as each employee makes an effective contribution at work (McGregor, *et al.*, 2004). Most studies in the context of the creative industries focus on new technological developments, user behavior, or new business models. Studies tend to overlook the soft factor of employees' skill level which is critical to adopting technological and organizational changes and to developing the necessary innovation capabilities (Kamprath and Mietzner, 2015).

Our second objective was to identify which twenty-first century skills are considered most relevant. Although not at the top of mind, most managers did recognize the presented skills. As Silva (2009) argued, while the cited skills may not be new, the extent to which performance is predicted by such skills makes them newly important. The participants viewed technical skills followed by creativity, problem solving, collaboration, and communication as the most relevant skills. Varying views were expressed on ethical awareness, cultural awareness, information management, and lifelong learning. It might be concluded that to perform core skills, it is useful to take contextual skills into consideration. The core skill of information management was considered as a generic skill that everyone must possess. The participants were more convinced on the relevance of the core skills than on that of the contextual skills.

The findings show that managers can use the presented skills framework as a point of departure for assessing employees. Most organizations seem to lack a description of the skills that are needed by their personnel. Organizations would benefit from a more explicit description of what is expected in each job function. Especially, considering the fact that managers have difficulties with finding people with the right skills, as the work they have to carry out is very specialist (Haukka, 2011).

Our third objective was to explore the role of twenty-first century skills in selection and performance assessments. Even if twenty-first century skills are considered for selection procedures, attention to skill levels is limited, especially for those already employed. In the case that selection procedures account for twenty-first century skills, most of the time only peoples' technical abilities are considered. Previous research shows that content-related skills

are more important than technical skills to succeed on the job (Mitchell, *et al.*, 2010; Robles, 2012). As a result, managers should acknowledge the importance of these skills. Furthermore, the majority of the participants stated that they do not conduct performance evaluations, because they do not know how to evaluate these skills. If these are evaluated, this happens by an annual performance appraisal. As we know from previous research, it is difficult for people to estimate their own skill level (Dunning, *et al.*, 2003; Merritt, *et al.*, 2005). The most important, and disturbing result is that the interviewed managers and senior executives do not know the level of skills of their employees. Apparently, actions to monitor or improve twenty-first century skills are not considered urgent. Although the importance of these skills is acknowledged, there are little initiatives to improve or consolidate skill levels. Actual measurements are needed to monitor skill levels and to identify possible insufficiencies. Unfortunately, however, this seem to be an unusual organizational practice. In line with previous literature, within the creative industries, formal training does not serve as a means for selecting talent and screening skills (Mietzner and Kamprath, 2013). In contrast, knowledge and skills are gained from learning-by-doing (Jeffcutt and Pratt, 2002). A large part of the participants argued that it is the responsibility of the employee to stay up to date. Employees have to take the responsibility to improve their skill level by asking for training or by experimenting with new software. Limited opportunities for employees to engage in skill development and pressure on employees to keep pace with technological developments in order to remain employable are ongoing issues in the creative industries workforce (Haukka, 2011).

Our fourth objective was to examine the digital aspects of twenty-first century skills. The participants found it difficult to discuss the role of ICTs and the Internet in their work activities. Most participants referred to technical programs that support the development of end products. When describing twenty-first century skills, it took them considerable effort to consider digital tools. This may be related to the fact that soft skills or content-related skills are underestimated, and difficult to observe, quantify, or measure (Cobo, 2013; Silva, 2009). Interviewees often stated that digital skills are almost considered a 'no brainer' for everyone in the creative industries. However, while information management, communication, collaboration, and problem-solving skills are often acknowledged as skills in which ICTs play a dominant role, managers could not mention how. To give organizations and their employees more clarity about the content of ICT-related job aspects, a digital profile could be helpful for each job function. Organizations can define digital skills areas for each function group that are expected to successfully perform the job. Furthermore, skill standards for professionals in the creative industries can be developed for screening during selection or for further development of existing personnel.

5.2. Limitations and avenues for future research

There are several points to consider in future research. First, we used the creative industries in the Netherlands as our study's context. Future studies may apply the same qualitative research methodology to study another occupation group and to prove whether our results are comparable with those of other industries. Similar studies on other samples would prove useful in comparing and extending our findings.

Furthermore, our findings are based on a small collection of 24 managers and senior executives, and so caution must be applied when generalizing. Although theoretical data saturation can be achieved with 12 interviews (Guest, *et al.*, 2006), the studied organizations illustrate the variety of creative industries in operation, rendering comparisons difficult. The challenge of coordinating such a diverse set of individuals with different skills is often held up as what makes the creative industries so distinctive (Hesmondhalgh, 2002). Future studies may thus conduct large-scale quantitative assessments on meaningful twenty-first century skills within creative industries to validate our research results. It would be of value to see if specific twenty-first century digital skills are more apparent within job function groups. In addition to further qualitative work, future studies might create more specificity by studying the similarities and differences of different subsectors (Hennekam and Bennett, 2017). Although our findings provide valuable insights into twenty-first century digital skills for the creative industries workforce in the Netherlands, more research is needed to determine whether the patterns identified in our data can be applied to professionals working in the creative industries in other countries. Overall, there is still a need to clearly document twenty-first century digital skills that employees need to learn in the workplace before we can develop an effective assessment of their impacts.


A few participants mentioned the interrelationships between various twenty-first century skills. They argued that twenty-first century skills are not distinctive in the sense that several skills interact. For example, communication skills were often viewed as a precondition for collaboration. This is definitely worth considering in future studies on operational definitions of twenty-first century skills. Furthermore, due to time constraints, we limited the amount of information presented to the participants. While we presented all twelve skills, complete conceptual definitions for each skill were not provided. Although the participants occasionally asked for explanations, ambiguities may have resulted. A few participants stated that

entrepreneurship would have been a good addition, as it is extremely important to market one's product. The creative sector is a commercial industry and it is thus necessary to think about ways to render the market ready for one's product. An emerging body of research promotes entrepreneurial skills as necessary to secure viable and sustainable careers in the creative industries (Daniel and Daniel, 2015).

Finally, it was difficult for the participants to consider the role of ICTs in twenty-first century skills. New ICTs were merely viewed as technologies to the participants and as self-evident tools used by the knowledge society in which we live. Besides, ICT tools are not needed to perform twenty-first century skills. ICTs rather provide us with new and powerful tools for supporting, for example, problem solving. Nonetheless, problems can be solved without the use of ICTs. To address this indistinctness, it may be useful to define the digital concept earlier on. We excluded the digital aspect at the start of the research project to allow the participants to disclose their own views on the use of ICTs for each skill. While this was not in line with the twenty-first century digital skills perspective, we developed insight into which twenty-first century skills benefit from ICT use from the creative industries workforce perspective.



6. Conclusion

Although the importance of twenty-first century skills is visible in policy and literature debates, organizations underestimate the need for adaptation of their human capital skills. Managers and senior executives responsible for skill development do not seem to have a clear overview about what professionals in the creative industries require and what skill education and training should focus on. They also seem to underestimate the importance of measuring employees' skill levels to improve or consolidate their job position. Organizations are recommended to pay more attention to developing skill profiles for each job function. For those employed already, effort is needed to observe skill insufficiencies to succeed and stay competitive. Managers need to give skill development priority and realize that it is of key strategic importance to organizations. 

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Twenty-first century digital skills for the creative industries workforce: Perspectives from industry experts

by Ester van Laar, Alexander J.A.M. van Deursen, Jan A.G.M. van Dijk, and Jos de Haan.

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