Skills Shortages, Gaps and Training Needs in the screen industries in Yorkshire and the Humber

Scoping Report

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sign Screen Industries Growth Network

Screen Industries Growth Network

The Screen Industries Growth Network (SIGN) is a unique, business-facing initiative supporting the TV, film and games industries in Yorkshire and the Humber. SIGN aims to make this region the UK's centre for digital creativity, and a model of diverse and inclusive activity. In order to do this, SIGN connects companies, support agencies and universities through a programme of training, business development, research and evaluation.

SIGN is a £6.4M project, starting in Summer 2020, and funded by Research England, the University of York, and its partners. The University of York leads the initiative, working with Screen Yorkshire and eight other Yorkshire universities. An extensive network of collaboration ensures that SIGN is equipped to deliver maximum impact across the region.

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Contents

1. Executive Summary

Discussions about skills in the context of creative work present a variety of challenges. These challenges vary from recognising abilities required to perform a given job task to the complexity of occupational roles in the screen industries. Furthermore, these challenges are not only about differences between skills for screen industry sub-sectors, but also about the transferability of skills beyond the screen industries. In addition, debates about skills and creative work are positioned within broader discussions about creative industry policies, tensions between the 'employability' imperative and educational provisions offered, and technological development and socio-economic changes (see Ashton and Noonan, 2013; ScreenSkills, 2019; Creative Industries Policy and Evidence Centre, 2019). Despite ongoing debates about the importance of the cultural and creative industries (CCIs) to the UK economy, the analysis of the extent and causes of skills shortages, the identification of skills gaps and the introduction and evaluation of appropriate training provisions remain significant challenges. A growing number studies and reports about different perspectives on skills and training in the CCIs, from academic institutions (e.g. Ashton and Noonan, 2013; Work Foundation, 2017), national trade bodies (e.g. Ukie, 2017, Animation UK, 2018) and international organisations (e.g. ILO, 2020a), also draw attention to the fragmentation of evidence, methodologies and terminology in assessing the problems of skills and training in the CCIs.

This scoping report contributes to this growing body of work about skills and training in the CCIs by focusing specifically on issues within the screen industries[1] in the UK. The aim of this report is three-fold:

1. based on an analysis of previous work, this report synthesizes and analyses knowledge about skills and training in the screen industries (film, television, animation visual effects and videogame industries).
2. drawing on data from reports and interviews with the industry's representatives, it provides insights into skills and training challenges observed in Yorkshire and the Humber region.
3. it identifies further research areas and gaps in knowledge in planning further research activities for the Screen Industries Growth Network (SIGN) project.

In achieving these aims, we highlight how the fragmentation of knowledge about the skills and training issues in the screen industries reflects the ways they are conceptualised and, in some cases, reproduced by the industry itself.

[1] Screen industries are identified in this report as the film, television, animation, visual effects (VFX) and videogame industries.

In summary, this report identified the following themes and gaps in discussions about skills and training in the screen industries:

1.1 Data

Fragmentation. There is a vast array of academic studies, publications and industry reports that aim to assess the skills and training needs of the CCIs, as they are often highly fragmented. The published reports also tend to utilise different data sources, methodologies and terminology, providing a further challenge in assessing skills issues comparatively (see Creative Industries Policy and Evidence Centre, 2019:44).

Screen Industries in Creative Industries. The use of official statistics presents a challenge in capturing adequately the needs of specific creative industries, especially screen industries (Creative Industries Policy and Evidence Centre, 2019:44). The majority of reports focus on skills mismatches in the context of broadly defined creative industries, though they do not discuss the specific needs of the screen industries (see Creative Industries Policy and Evidence Centre, 2019). Furthermore, problems relate to data that are not captured in the official statistics, such as data about self-employed workers or microbusinesses (Creative Industries Policy and Evidence Centre, 2019:44).

Classification Problems. Data problems are also visible in the delays in updates to official characteristics, such as Standard Industrial and Occupational Classifications. These problems result from the fast-paced development of the screen industries, including the development of new occupational roles and business models and the transferability of skills/roles from one screen industry to another (for example, VFX in animation, film and games). This also leads to reports using different types of classifications (see, for example, ScreenSkills, 2019).

Granularity of Data. Official statistics do not provide data granularity in terms of assessing CCI sub-sectors, including screen industries, the sub-sectors of screen industries, occupational roles and regional distribution. Furthermore, studies that aim to capture data about screen industries (such as VFX, videogame animation) encounter further problems with finding granular data to assess the challenges experienced by these industries. The videogame industry is often mentioned as an example of an industry in which skills issues are difficult to assess because of data shortages (e.g. ScreenSkills, 2019; Creative Industries Policy and Evidence Centre, 2019; Mullen et al., 2019).

Terminology Issues. Data used in reports must be further investigated in terms of evaluating and assessing the terminology used. Industry reports often refer to a broad arrays of concerns, such as 'technical skills' or 'management skills', but they need to be positioned according to the specificity and needs of given sub-sectors, work organisation provisions and job roles. There is a need, therefore, to systematise and problematise the terminology used in assessing skills and training challenges in the screen industries.

Beyond Employers. Data about skills issues and training needs are often addressed from the perspective of employers in the screen industries (as skills shortages and gaps). However, these data could be supplemented by the perspectives of workers with different experiences in the industry (e.g. recent graduates, new entrants, experienced workers and freelancers).

1.2 Scope

Occupational roles. There is a need to develop a more systematic and updated list of occupational roles in the screen industries. The published reports and institutional providers (such as ScreenSkills, 2020) offer some insights into occupational roles in the screen industries; however, these lists are often not updated systematically to capture the variety and development of new occupational roles in the sector.

Not only Film and TV. There is a data imbalance and research focus on skills mismatches in the film and television industries, with less attention being paid to skills mismatches in animation, VFX or videogames (ScreenSkills, 2019a:55).

Skills Migration. There is a need to provide further insights into assessing the migration of skills and roles to different sub-sectors and industries. For example, this assessment may consider the transferability of skills from one screen industry to another (for example, the role of animators in the videogame industry), as well as the transfer of other roles, such as accountants, construction or hair and make-up, to the screen industries (film and televisions industries).

1.3 Focus

Skills Needs in the Context of SMES. Considering that most businesses in the screen industries are micro businesses, further research projects could explore approaches to skills issues and provide training in the context of small, medium and micro companies.

Developing the Local Talent Pool. Screen industry companies and workforces are concentrated in London and the Southeast parts of England (except for the videogame industry companies); therefore, future research projects could investigate specific challenges in skills and training development in particular regions and screen industry sub-sectors.

Freelancers and Skills Development. According to the data provided by ScreenSkills (2019), training supported and offered by screen industry employers varies across the sub-sectors. Considering the different forms of work organisation and training in the screen industries, there is a research gap in investigating the skills development and training needs of freelancers.

Tacit knowledge. Knowledge about work in the screen industries is often associated with the acquisition of tacit knowledge (understood as 'learning by doing' or 'on-the-job learning'; Howells, 1996). This type of knowledge is also discussed as superior to codified knowledge about screen media production (e.g. learning through formal courses; see ScreenSkills, 2019). However, there is a need for further critical investigation to address the acquisition of this type of knowledge in different production settings, as well as its limitations. Furthermore, it has been acknowledged in studies about screen industries that tacit knowledge is acquired not only in specific work settings but also through engagement with professional networks and communities both online and offline (e.g. Weststar, 2016). We must acknowledge, therefore, that barriers exist in accessing those settings and networks, and therefore tacit knowledge is not easily acquired for all. Further investigation is required to understand the process of acquiring tacit knowledge not only in the context of particular screen industries but also in relation to the structure and work organisation of production in a given region.

1.4 Crises

COVID-19. In light of the ongoing pandemic and its impact on the screen industry production and workforce, future research projects could explore the development of new occupational roles (e.g. COVID-19 assistants, virtual production jobs) and training (from new approaches to health and safety at work to providing alternative forms of training [online] in the sector).

Accessing International Talent, Immigration Policies and Brexit. Many areas of the screen industries search for and employ workers internationally. Concerns with the introduction of new immigration policies have been widely voiced by the representatives of the screen industries (see ScreenSkills, 2019; Ukie, 2017; Tiga, 2015; Animation UK, 2018). There is a need to assess the impact of Brexit and immigration policy on recruitment and maintaining the international workforce.

2. Introduction

Discussions about skills in the context of screen industries work present a variety of challenges. These vary from recognising abilities required to perform a given job task to the complexity of occupational roles in the sector. These challenges are not only about differences between skills for screen industry sub-sectors, but also about the transferability of skills beyond the screen industries. In addition, debates about skills and creative work are positioned within broader discussions about creative industry policies, tensions between the 'employability' imperative and educational provisions offered, and technological development and socio-economic changes (see Ashton and Noonan, 2013; ScreenSkills, 2019; Creative Industries Policy and Evidence Centre, 2019). Therefore, this report approaches 'skill' in the screen industries through recognition of socio-economic and political contexts in which skills required to work in the screen industries are constructed. Despite ongoing debates about the importance of the cultural and creative industries (CCIs) to the UK economy, the analysis of the extent and causes of skills shortages, the identification of skills gaps and the introduction and evaluation of appropriate training provisions remain significant challenges. A growing number studies and reports about skills and training in the CCIs, from academic institutions (e.g. Ashton and Noonan, 2013; Work Foundation, 2017), national trade bodies (e.g. Ukie, 2017, Animation UK, 2018) and international organisations (e.g. ILO, 2020a), draw attention to the fragmentation of evidence, methodologies and terminology in assessing the problems of skills and training in the CCIs.

Inevitably then, the assessment of skills and training needs in the CCIs presents many problems, among which the rapidly changing and developing landscape of screen industries results in variety of approaches and definitions of 'skills' and 'skills mismatches'. We can identify five intersecting elements of key importance:

a) **Labour markets and work organisation:** ongoing changes in labour markets and approaches to organisation of work in the screen industries have an impact on defining skill sets desirable to find and maintain employment in the screen industries. Work in the screen industries relies on project-based organisation of production and associated employment insecurity and instability requires workers to acquire specific set of skills, abilities and behaviours to secure jobs. The differences in adaptational approaches to changes in labour market are presented in numerous academic studies which reflect on the need to develop skills in one's reputation management, increased networking or self-banding building to maintain employed in the screen industries (e.g. Gill, 2011).

b) **Geographies of production:** the diversity of companies in the screen industries' value chains raises questions about interconnectedness among entities based and operating regionally, nationally and internationally (e.g. partnership companies, outsourcing, offshoring, software but also hardware production). This the variegated geographies of screen industries means identifying the diversity of skills associated with understanding international operations of companies, distribution and co-operation if complex.

c) **Development of new business models:** the development of new infrastructures in content development, distribution and curation such as increasing important position of Subscription Video on Demand (SVoD) providers in television and film industries (e.g. Netflix), also subscription models of accessing game content (e.g. Apple Arcade, Google Stadia) or content distribution (e.g. Steam), demonstrates changing approaches to deliver the media content and engaging with audiences (e.g. Lotz, 2019). This trend leads to recognition that cultural production is increasingly dependent on a selected group of digital platforms[2] developed or supported by technology giants such as Google, Apple, Facebook, Amazon and Microsoft (GAFAM) (Nieborg and Poell, 2018). From the perspective of skills development, it is important to recognise the impact of companies in content creation (see section 3.2 Television), investments in training[3] and new sets of skills required to understand internal governance of platforms, their algorithmic structure and audience data.

d) **Financialisation:** media products and the companies which produce them are increasingly seen as investment vehicles for economic actors beyond the screen industries including the venture capital industry, tax consultancies and technology investors. Financialisation changes the nature of production in the screen industries, how and why business decisions are made, and investment decisions about what is likely to generate the greatest returns in the short to medium term, including supporting skills provision.

e) **Immediate challenges:** firstly, the ongoing COVID19 pandemic has an impact on work arrangements in the screen industries. The pandemic exacerbated precarity and inequalities experienced by many creative workers (e.g. Banks,

[2] Platformisation of cultural production refers to '(…) the penetration of economic, governmental and infrastructural extensions of digital platforms into the web and app ecosystems fundamentally affecting the operations of cultural industries' (Nieborg and Poell, 2018:4276).

[3] According to the interviews conducted for this report, major digital platforms providers engage not only in commissioning television or film production (which also shapes identification of skills shortages and gaps) but also in providing training (e.g. Netflix).

2020) prompting questions about workers' wellbeing and possibility of finding employment in the sector (Swords, 2020). While each of screen industries have been affected differently by the imposed restrictions, the pandemic accelerated investments in remote work arrangements and use of different technologies (e.g. virtual production tools). The pandemic has also created a need for developing additional skills (e.g. COVID19 assistants) and concerns about limited access to on-site practical training for new entrants to the screen industries. Secondly, according to numerous reports (e.g. Animation UK, 2018; VFX, 2020; Ukie, 2019; Bakhshi and Spilsbury, 2019), the British withdrawal from the European Union (EU) will have an impact on screen industries in the UK. Currently, national skills shortages mostly in animation, VFX and videogames are addressed by hiring creative workers from the EU. However, the possibility of hiring creative workers from abroad will become increasingly difficult after December 2020 with the introduction of a points-based immigration system.

This scoping report contributes to this growing body of reports and studies about skills and training in the CCIs by focusing specifically on skills mismatches issues within the screen industries[4] in the UK. This report approaches analysis of skills in the screen industries through skills mismatches understood as skills shortages (i.e., difficulties with recruitment for specific job roles) and skills gaps (i.e. gaps in abilities and skills identified in existing workforce) (see ILO, 2020a; McGuiness et al. 2017:2). The aim of this report is three-fold. First, based on an analysis of published studies and reports, this report systematises and analyses knowledge about skills and training in the CCIs. Second, drawing on data from reports and 11 interviews with the industry's representatives, it provides insights into skills and training challenges observed in Yorkshire and the Humber region[5]. Third, it identifies further research areas and gaps in knowledge in planning further research activities for the Screen Industries Growth Network (SIGN) project. In achieving these aims, we highlight how the fragmentation of knowledge about the skills and training issues in the screen industries reflects the ways they are conceptualised and, in some cases, reproduced by the industry itself.

Through analysis of the secondary sources (e.g. reports about skills mismatches in the CCIs and screen industries) and interviews, we identify the following challenges and gaps in knowledge in discussing skills shortages, gaps and training needs in the screen industries in Yorkshire and the Humber.

[4] Screen industries are identified in this report as the film, television, animation, visual effects (VFX) and videogame industries.

[5] Please see the appendix 1 for further details.

2.1 Data

Accessibility and granularity of the published data: There is a scarcity of data about skills shortages, skills gaps and training needs in the region. Data about Yorkshire and the Humber tend to appear in general overviews about skills mismatches in the UK, regionally and nationally (e.g. ScreenSkills, 2019). Furthermore, national statistical sources (e.g. Employer Skills Survey (ESS)) do not provide an adequate level of granularity of data to discuss occupational shortages with a focus on the screen industries in a given region. While there are unpublished reports about skills mismatches and training needs in Yorkshire and the Humber, they are not publicly accessible.

2.2 Scope

Yorkshire screen production in relation to screen industries production in other regions: The interviewees in this study suggested that the in-depth analysis of the skills mismatches and training needs of the screen industries in the region would be beneficial for Yorkshire-based companies and workers and provide a better understanding of the landscape of screen production in the UK. The density, distribution and structures of the companies, workforce and needed skills in the region demonstrate tensions and challenges in developing workforce skillsets in the regional context. Therefore, future investigations of regional skills mismatches should also consider the relations among major hubs for screen industries production, the location of the training provisions and workers' mobility (e.g. disparities between where freelancers are based and where they work).

Differences within the region: However, it is not only about the investigation of the region itself but also about recognising differences within the region in terms of the location and scope of the screen industries productions and workforce. The interviewees drew attention to specific skills shortages and training needs depending on the location of the screen industries companies in Yorkshire, for example the availability and needs of workforce with particular skillsets in Leeds, Sheffield, Hull, Bradford or York.

2.3 Focus

Regional understanding of and expectations about skills: To understand skills shortages, skills gaps and training needs in Yorkshire, it is vital to pay attention to the structure, size and the stage of development of the screen industries companies in the region. While the interviewees in this study identified skills shortages and skills gaps

in the screen industries workforce, which could be also observed at the national level, the understanding of the given skills and the level of expertise needed for the region can differ among different regions. The interviewees argued that creative workers in Yorkshire and the Humber need to have a variety of skills to adjust to the uncertainty of screen industries production and to the variety of productions in the region.

Reporting on skills shortages and skills gaps in Yorkshire: According to the ScreenSkills (2019) report, in the last 12 months, 41% of the employers based in Yorkshire and the Humber experienced recruitment difficulties and 38% reported skills gaps in their workforce. The interviewees also observed skills mismatches in the creative workforce based in Yorkshire. However, some of the reported skills shortages can also be present, nationwide (e.g. production accountants, C++ programmers) as well as specific to a particular location within the region (e.g. differences in the availability of the workforce between Hull and Leeds). The skills gaps reported by the interviewees were similar to those identified in the screen industries workforce nationally. However, the interviewees specifically noted two types of skills gaps. First, they argued for skills gaps in intrapersonal/communication and teamwork skills among workers at different stages of their careers. Second, they identified gaps in the workers' knowledge about the practicalities of the production process, organisational process and business development (e.g. organising production, cash flow, self-branding). Overall, the interview data reveal the importance of understanding skills shortages and gaps not only by identifying positions that are particularly difficult to recruit but also understanding them within a specific socio-economic context of the Yorkshire-based screen industries.

Solutions and training provisions: The interviewees' suggestions about possible solutions to the identified skills mismatches in the region ranged from providing reliable resources about available occupational positions and career pathways to people who would like to launch their careers in the screen industries, sharing practical knowledge about production processes and developing their own businesses to implementing training opportunities for specific occupations (e.g. directors, writers in the film and television industry). The interviewees also argued that the level of expertise offered by given training provisions is an important aspect of successfully developing workforce skills. The majority of the training provisions for the mid- and senior-level workforce are based in London; thus, some of the interviewees argued that they would like to see more training dedicated to supporting the skills development of workers in the mid-to-senior stage of their career.

2.4 Crisis

Crisis and the region: The interviewees mentioned the challenges and opportunities associated with the disruption caused by the COVID-19 pandemic, technological changes and the UK's withdrawal from the European Union. They argued that the restrictions imposed by the COVID-19 pandemic have had an impact on the organisation of training and production in the screen industries. The interviewees noted that some forms of practical training (e.g. access to placements) will be limited or entirely suspended, which will impact the skills development of new entrants in the television and film industries. Furthermore, the interviewees drew attention to the increasing needs for new positions, such as COVID-19 assistants, in television and film production. However, they also addressed the opportunities provided by the current situation in terms of greater accessibility to workshops and meetings (often conducted online) and the possibility of working from home (WFH). The possible impact of Brexit and changes in the immigration rules were less often discussed by the interviewees in this study; these issues were more frequently mentioned in the reports about skills shortages in specific screen industries or nationwide (e.g. Animation UK, 2018; TIGA, 2015; Bakhshi and Spilsbury, 2019).

This report is divided into three sections. The first section (chapter 2) presents a contextual background to position and understand current landscape and approaches to skills and training provisions in screen industries. This section engages with discussions about different use of terminology and theoretical approaches in defining skills and skills mismatches in the CCIs and screen industries. The second section (chapter 3) discusses skills gaps and training needs in relation to specific screen industries. Skills and training in given industries have specific culture of development, learning practices, tradition of training and organising occupational positions. Therefore, this section is introduced to systematise knowledge about occupational structures of these industries and their challenges and benefits as well as in relation to reports and academic research. The third section (chapter 4) presents discussion about the skills and training needs of the screen industries (i.e., animation, VFX and videogames) in the Yorkshire and Humber. This section is primarily based on analysis of interview data collected between September and November 2020. In the conclusion, this report presents challenges and gaps in knowledge about skills mismatches and training needs in the screen industries.

3. Contextual Background

This section provides a context for discussions of skills shortages, gaps and training development in the screen industries and presents the terminology and definitions used in this report. Information and discussions about the specific needs of a given screen industry (such as film, television, animation or videogames) are included in section three of this report.

3.1 Defining Skill

Skill is an elusive concept whose definitions are inconsistent and range from a broad 'common-sense' understanding of skill as 'the ability to carry out the tasks and duties of a given job' (ILO, 2020a) or the 'craft' definition of skill associated with task-specific training (see Braverman, 1998 [1984]) to a variety of expansions of those definitions that emphasise the contributions of non-manual labour to the economy, such as various forms of communication, interpersonal and creative skills (see the discussion in Hurrell et al., 2012 and BFI, 2017). Consequently, the concept of 'skill' has numerous competing definitions that have developed over time in relation to given political and socio-economic changes. Furthermore, attributing certain assumptions, values and ideas to given skills indicates a social and economic valuation of certain occupations and jobs as 'skilled' or 'unskilled' while denoting individuals as under- or overqualified for specific jobs[6].

The redefinition, use and introduction of diverse notions of skill are associated with specific power dynamics, political environments and cultural discourses on work and the types of work important for the main, established economic strategies. Therefore, what is often defined as 'skilled' or 'unskilled' work or identified as important for future economic development reflects broader political, social and economic discourses, fundamental ideologies and the intended direction of socio-economic changes. Undoubtedly, different definitions of skill lead to distinct ways of assessing and measuring mismatches in skills in given occupations, sectors, industries and the wider economy. In other words, 'skilled work depends not only on the level of a person's ability, but also the work, organisational and social context in which skills are deployed' (see Hurrell et al., 2012: 165). The concept of skills has been theorised through a variety of theories which could be broadly (but not exhaustively) classified as Marxist-inspired, neo-Weberian, neoclassical or social-constructivist theories (see the

[6] This social valuation of certain skills and occupation is also visible in the government and media produced discourses about not only 'skilled' but also 'essential' workers during the COVID19 pandemic. These discussions are also important in understanding proposals of investments in re-skilling of workers, including creative workers in the context of current crisis (e.g. ILO, 2020b).

discussion in Vallas, 1990). The underpinning epistemological assumptions of the aforementioned theories also demand specific understandings of skill, from skill as an objective measure of a worker's ability in a given job (neoclassical) to the social-constructivist understanding (in which authors pay attention to how certain ideas and attributes of skills are socially constructed) to the understandings of theories that pay attention to the materialist aspects of work in terms of the technology and tools employed (Wajcman, 1991). Therefore, while disputes about skill are persistent in academic debates, there is a consensus that skills must be understood within a specific context. Therefore, following Grugulis et al. (2004) and Cockburn (1983), the definition of skill and its dimensions embraces:

- the abilities of the worker
- the skills that are required in the job
- the socially constructed skills through which economic actors utilise power resources

This definition demonstrates that, while assessment of an individual worker's abilities is important, those abilities need to be evaluated in the context of performed tasks and jobs as well as within the broader socio-cultural context. This extended definition is important, including in studies of the screen industries, in understanding the challenges in positioning and evaluating not only an individual but also the environment in which skills are used and how specific discourses about skills are deployed. The definition of skill and its measurement must take into account occupational roles, pathways of career progression, responsibilities in a given sector and the working conditions and quality of jobs in the sector. Furthermore, that definition needs to represent how the social valorisation of certain 'skills' over others is constructed as well as the material base of the skills employed (such as the tools and technology used). This is especially important in the context of understanding inequality, discrimination and the exclusion of certain demographic groups from the sector (see Wajcman, 1991).

3.2 Defining Skills Mismatches

A skills mismatch may be defined as 'a discrepancy between the skills that are sought by employers and the skills that are possessed by individuals' (ILO, 2020a). Assessing the extent and impact of skills mismatches by obtaining reliable, consistent estimates is an important component of informing policy debates; it is also relevant in discussing skills shortages, demands and training provisions in the screen industries (ScreenSkills, 2019). The term 'skills mismatch' and the measurements associated with it raise questions, however, about who is reporting skills mismatches as well as how and under what conditions. The term 'skills mismatch' refers to a broad category

of issues associated with skills but also frequently puts the focus on individual levels of ability (see the discussion in McGuinness et al., 2017). Studies and policy documents tend to refer to diverse features of skills mismatches, including:

- over- or underskilling (vertical mismatch)
- **skills shortages**, which 'relate to a situation whereby employers are unable to fill key vacant post due to a lack of suitable candidates' (McGuiness et al., 2017: 2).
- **skill gaps:** the extent to which workers lack the skills necessary to perform their current jobs (McGuiness et al., 2017: 8).
- **skills obsolescence:** when workers lose their skills over time because they are not used or when skills become irrelevant due to changes in the employment landscape (see ILO, 2020a).

Indeed, both industry's policies and its broad surveys assessing skills mismatches often reflect the employer's perspective on skills gaps and shortages (McGuinness et al., 2017: 2). Similarly, in the context of data about skills mismatches in the screen industries, most insights are generated through surveys of employers or interviews with the key representatives and companies in the sector (ScreenSkills, 2019a; Animation UK, 2018; Work Foundation, 2017). While it is a widely accepted practice to collect data about skills gaps and shortages from the perspective of employers, the studies that collect data about underskilling present only a one-sided story about skills mismatches. Therefore, the collection of further data using both quantitative and qualitative measures and looking closely at the experiences of various workers and prospective workers and their career development and skills progression would be beneficial to understanding the context of skills gaps and shortages in the screen industries.

Vallas (1990: 383) argues that studies adopt three distinct approaches in analysing data about skills mismatches: (1) quantitative studies that are nationally representative, (2) quantitative studies that focus on the nationwide data of a specific industry or region and (3) qualitative studies that explore changes at the level of firms or occupations. Similar research approaches are employed in assessing skills mismatches in the screen industries, combining quantitative and qualitative data sets from national statistics (such as Office for National Statistics (ONS), Labour Force Survey (LFS) or Employer Skills Survey (ESS)) (see ScreenSkills, 2019; Work Foundation, 2017), quantitative data from surveys about certain subsectors of the screen industries (Animation UK, 2018) and qualitative data generated through interviews, focus groups or panels with experts from the industry (see ScreenSkills, 2019b, Work Foundation, 2017).

These sources of data about skills mismatches in the screen industries present some challenges. National statistics data (such as ONS, LFS and ESS) may not accurately capture the classification of occupations, especially in expanding subsectors such as animation and VFX. For example, the Standard Industrial Classification System adopted by the ONS does not accurately represent and account for some screen industries transfers, for example, the contribution of VFX and animation in film and television production (ScreenSkills, 2019a:5). Furthermore, the Employer Skills Survey does not adequately provide representative, granular data about the screen industries at the regional level.

The quantitative data generated by surveys directed at employers in the sector (see ScreenSkills, 2016) or subsectors (see Animation UK, 2018) provide insights into employers' attitudes towards skills gaps, shortages and training provisions, but different reports follow different methodologies and strategies in presenting the data. Surveys also introduce inconsistent terminology in understanding skills mismatches, such as 'skills issues' (Bakhshi and Spilsbury, 2019), and some surveys focus on different subsectors of the screen industries (see ScreenSkills, 2019). Furthermore, quantitative data collected through surveys does not provide an in-depth understanding of some categories defined as having skills gaps, for example, referring to them in generic terms of 'IT/software skills' or 'communication skills' (see Animation UK, 2018).

Finally, the qualitative data collected through interviews, focus groups or panels with experts allow the supplementation of quantitative data with more in-depth insights about skills gaps and skills shortages. However, this subjective measurement also presents challenges in distinguishing perceived from genuine skills gaps and shortages. Scholars have argued that the reporting of certain skills and training needs to be positioned within given organisational practices, organisational politics and the further development of the economic environment. Qualitative data collected from employers fails to further position skills gaps and shortages within the broader context of jobs quality and working conditions in the industry. This is especially important as skills shortages can arise from poor job conditions, remuneration levels or the location of jobs offered in the screen industries[7]. The failure to address the broader context of the screen industries sometimes leads to a presentation of skills gaps and shortages as either a matter of individual workers or a problem of the educational system. The need to collect in-depth qualitative data in research on skills and training is also evident

[7] For example, the problem with poor management and working condition can lead to skills withdrawal which does not necessarily designate a skills gaps in workforce but reflect on the low levels of job commitment (see Hurrell, 2016).

in defining and understanding the specific needs and terminology used in studies on skills shortages and gaps.

3.3 Conceptualising Skills and Training in the Screen Industries

The majority of reports tend not to define or question the concept of skill used in the publications (e.g. ScreenSkills, 2017/2019/2019b; Work Foundation, 2017; Animation UK, 2018, TIGA, 2015). However, while the concept of skill is not directly defined in the reports, it is approached through the assessment of measures (through quantitative and qualitative methods) of skills shortages and gaps. This approach seems to define the term as individual attributes and abilities and/or by identifying inadequacies in educational and training provisions (see ScreenSkills, 2019; ScreenSkills, 2017). Nonetheless, some reports (ScreenSkills, 2019b; Creative Industries Policy and Evidence Centre, 2019; IGDA, 2004) also mention the importance of acknowledging job quality and working conditions in the screen industries in discussions about skills mismatches.

Therefore, this section gives an overview the approaches, and the evolution of those approaches, to skills in the cultural and creative industries (CCIs), taking into account that developing an understanding of skills and approaches to training provisions requires recognising (1) the political and economic environment in which the discourse on specific skill sets and their contributions to the wider economy are deployed, (2) the sociohistorical development trajectories of particular screen industries and their approaches to occupational roles and job tasks and (3) the development of new business models, technologies and networks of screen industry production.

3.3.1 Discourses on skills and training in the CCI

Discussions about skills development, the shortage of talent in the CCIs and the role of higher education (HE) in training ‘employable’ creative workers are related to the development of creative industries’ policies and to ongoing discussions of the potential economic contribution of the ‘creative sector’ to the overall UK economy (see Ashton and Noonan, 2013; Banks, 2007; Banks and Hesmondhalgh, 2009: 427; Oakley, 2013). Schlesinger (2007) demonstrates that ‘creativity’ becomes a hegemonic term in a framework of policy ideas, including ideas about the future of education, skills development and the workforce. The use of broad categories of ‘creative skills’ and related terminology, such as ‘create-tech’ skills or ‘fusion’ skills, aligns with a creative industries political strategy in its approach to workers’ positions in the ‘new knowledge economy’. Keep and Mayhew (2010) demonstrate that UK skills policies act as a substitute for other social and economic measures, which results in a narrowly defined, technicist view of interventions. The authors demonstrate that the narrative of skill

development as a solution implies fixing a variety of issues, from anti-social behaviour and a low level of intergenerational social mobility to regional economic performance (Keep and Mayhew, 2010). This strategy relies on a deficit model of an individual (worker) in which the solution to challenges ranging from a lack of certain skills to becoming a more business-oriented person is simply a matter of investing in the right skill sets or training.

From the conception of creativity as a driving force of the UK economy in the 1990s to more contemporary examples, such as reports curated by NESTA, the ideas of 'creative' skills[8] and their importance to the UK economy are widely promoted. However, the term 'creativity' is ubiquitous and applied to a variety of occupational roles,[9] and no clear consensus exists on what 'creative skills' actually entail. 'Creativity' is not the only ubiquitous term used in reports on skills development in the CCIs. The creative industries' policy programme also relies on a discourse about skills knowledge in the context of the knowledge economy, which translates into increasingly prominent discussions about technology and skills. The terms 'technical skills', 'technological skills' and 'digital skills' refer to a broad range of abilities, from the ability to use specific software (e.g. Adobe After Effects) to adaptability in using diverse digital media (e.g. social media networking sites) (see Djumalieva and Sleeman, 2018). Thus, the use of this terminology is itself inconsistent and may direct us to various interpretations of what 'technical skills' entail and what kind of training should be provided. In addition, reports specifically about the creative industries tend to approach discussions of technology and the future of work through the lens of technological determinism[10] or through buzzwords such as AI, automation and machine learning. However, it is necessary to recognise technological changes in the creative industries and to understand the screen industries as being embedded in specific socio-economic, political and cultural challenges that prioritise some technologies over others. Furthermore, some reports perpetuate a false dichotomy between 'creative' and 'non-creative/routine' jobs, misrepresenting the social value of

[8] The debate in the creative industries uses not only the term 'creative skill' but also 'creative talent,' which raises questions about the distinction between the understandings of 'skill' and 'talent' in the context of the creative and screen industries (see Boyle, 2018).

[9] A NESTA analysis of advertisements in the UK (2013–2017) indicates that 'creativity' is described as a job requirement mostly by a small number of occupations that are often on the DCMS list of 'creative occupations' (Easton and Djumalieva, 2018). However, this analysis only demonstrates how creativity is used and interpreted by HR departments, and, unsurprisingly, it is consistent with the DCMS list of 'creative occupations'.

[10] The term technological determinism describes justifications for societal changes in which 'technology developed independent of social forces and causing social change' (MacKenzie and Wajcman ([1985] 1999). The primary focus on technological development without positioning it within broader social, political and economic influences is also evident among policymaking practices (see discussion in Wyatt, 2008).

the jobs performed, which obscures the actual variety of job tasks, abilities and skills that are required for economic development.

Furthermore, the majority of reports analysing skills mismatches in the context of the CCIs and the screen industries refer to skills that encompass a variety of interpersonal, communicational, transferable or social skills (Work Foundation, 2020/2017; ScreenSkills, 2019; Creative Industries Policy and Evidence Centre , 2019).[11] These skills reflect a broader category of one's having the specific personality, attitude and interpersonal skills to work collaboratively in the CCIs. However, the problem of assessing such skills lies in their subjective nature when defining them as a skills gap identified in the workforce by employers. This subjective assessment also raises questions about the problems of inequality and discrimination in the screen industries, in which recruitment is often done through informal networks. The last types of skill often evoked in reports on the CCIs and the screen industries are management and leadership skills, which range from knowledge of HR practices and personnel management to forms of entrepreneurial knowledge. The above-mentioned types of 'skill' viewed as important for the CCIs and the screen industries are often described as leading to a 'blend' of different types of skill that combines specialist knowledge, technical prowess and transferable and entrepreneurial skills, termed 'fusion skills', in preparing workers for the future of work (see discussion in Creative Skillset, 2013).

3.3.2 Skills Mismatches in the Screen Industries

Skills shortages

Skills shortages refer to difficulties in the recruitment of suitable, qualified candidates for a given job post (McGuinness et al., 2017). According to the Creative Skills Monitor (Work Foundation, 2020:19), around 6% of employers in the creative industries experience skills shortages, which is a similar percentage to that of the wider UK economy[12]. Skills shortages can be caused by a number of factors: expansion and growth of specific areas of production (e.g. skills shortages identified in high-end television production (ScreenSkills, 2019b)); changes in technologies; new business

[11] The challenge of analysing these skills needs also lies in the variety of terminology used to address these types of skill, including 'soft skills', 'meta-skills', 'social skills', 'transferable skills' and 'employability skills'. As debates in the sociology of work demonstrate, these terms and the idea of 'soft skills' are highly problematic see Hurrell et al., (2012); Hurrell, (2016); Grugulis and Vincent (2009).

[12] However, a survey using different methodology indicated that 42% of employers in the creative industries had jobs affected by skills issues (Bakhshi and Spilsbury, 2019:5). 'Skills issues' is defined as a combination of skills shortages and skills gaps.

models (e.g. increased demand for community managers[13] in the videogame industry); problems with job quality; working conditions or changes to immigration policy. The range of causes and sub-sector specificity means skills shortages should be investigated with specific foci. For example, taking into account organisational modes (e.g. project-based), labour market composition (e.g. contribution of freelancers), job quality (e.g. work hours, financial remuneration, poor management practices), or specialist training requirements (e.g. accreditation).

Jobs in the screen industries are characterised by the precarity and vulnerability of workers, who often experience irregular, project-based patterns of work as well as the requirements of building their own career portfolios and investing in their own training (see Gill, 2002/2011). There is a considerable number of studies regarding poor management practices and working conditions in the screen industries which allude to underlying causes of underinvestment in skills investment. These range from research about the precarity of project-based employment (Ursell, 2000; Gill, 2002), the prevalence of "voluntary" or free labour in the industry (Percival and Hesmondhalgh, 2014), overtime work (IGDA, 2004), burnout (ScreenSkills, 2019b), accounts of discrimination and inequalities, exploitation by employers and self-exploitation. The problems of skills shortages and working conditions are also visible in reports about specific sub-sectors of the screen industries. Thus, although cases of skills shortages can be associated with rapid development of production and the search for new talent, it can also signal problems with job quality and working conditions.

Skill Gaps

A skills gap is defined as 'the extent to which workers lack the skills necessary to perform their current job' (McGuiness et al. 2017:8). According to the Creative Skills Monitor (Work Foundation, 2020), skills gaps have been identified in 8% of businesses in creative industries[14]. As with skills shortages, the extent and nature of skills gaps vary depending on the sub-sector in the screen industries. According to the ScreenSkills survey (2019:39), 35% of employers admitted that their workforce had skills gaps; this problem was more visible in the contexts of animation and the VFX industry, and is geographically uneven. Skills gaps were reported as mostly prevalent in Scotland (16%), Northern Ireland (10%), North West (10%) and London (9%) as

[13] Community managers include workers, based in the game development studio or outsourced, who provide support for players communities. Community managers work is associated with '(…) work tasks placed almost entirely online and these workers must 'take care' of the user community and provide a communication channel between developers and players' (Kerr and Kelleher, 2015:177).

[14] Less than in the United Kingdom economy overall (13%).

well as mostly temporary with gaps reported among new recruits (65%) or employees who did not complete their induction training requirements (66%) (ScreenSkills, 2019a:39; see also Work Foundation, 2020).

According to reports from the Work Foundation (2017/2020), skills gaps arise from pipeline talent problems associated with rapid industry growth. Among screen industry employers, skills gaps were reported in management (44%), leadership (44%), project management (40%) and IT/software skills (37%) (ScreenSkills, 2019a:43). These gaps could have been further understood by collecting in-depth qualitative data on how the employers defined management and software skills. Skills gaps have also been associated with a lack of preparedness among new entrants (Work Foundation, 2017). Furthermore, reports discusses gaps in so-called 'soft skills' defined as 'right attitude' to work, personality, broad knowledge about the screen industries, ability to engage in teamwork and communication skills (ScreenSkills, 2019:45; Work Foundation, 2017).

Unlike skills shortages, which are mostly defined by hard-to-fill occupational vacancies, such as production accountant, skills gaps are often defined in reports using abstract and subjective attributes (such as those discussed in section 2.3.1). These gaps can range from 1) specialised knowledge needed to perform a job to 2) digital skills to 3) soft skills, such as managing one's own time to 4) leadership and management skills. Overall, in reports about the screen industries, skills gaps in management and leadership skills were the most widely cited (e.g. ScreenSkills, 2019; Work Foundation, 2017). Respondents acknowledged that workers often learn such skills through on-the-job experience rather through formal training (ScreenSkills, 2019b).

In terms of ways to address skills gaps, employers primarily cited expanded training (traineeship/work placement) (65%), mentoring/buddying schemes (56%) and training support for freelancers (53%) (ScreenSkills, 2019). Skills gaps did not typically motivate employers to search for and employ international talent (Work Foundation, 2020:23).

Modes of Training

Assessment of training provision in the screen industry presents many challenges. Contrary to other industries and professions, the screen industry does not require specific professional qualifications to work in the industry. Indeed, much recruitment is based on reputation and personal contacts, with job descriptions rare in some areas, meaning awareness of skills requirements is low without experience of the industry or

knowledge of specific projects. The perception of an individual's experience, 'fit' and portfolio are often cited as more important than qualifications or formal education.

These tensions are also visible in the ongoing discussions about the value of higher education in preparing graduates for screen industry work (see discussion in Ashton and Noonan, 2013). This debate indicates further issues around questions of 'employability' and higher education's purpose in modern society related to a given industry's 'job-readiness' (see Oakley, 2013). This perspective is also further fragmented by each screen industries' different socio-cultural and economic development history and approaches to on- and off-the-job training, and engagement with education institutions. For example, the film and television industries have longer traditions and cultural legitimacy of film schools, courses and training provisions compared to videogame design or development courses.

Unsurprisingly, screen industry training provisions vary widely from nationally accredited and recognised courses (such as courses provided by the National Film and Television School (NFTS) to informal[15] learning provisions during meetups, workshops or game jams (e.g. Harvey and Fisher, 2015; Kennedy, 2018)). However, as all reports about skills issues demonstrated and the interviews of this study confirmed – majority of training provisions and opportunities for supporting various skills, occupational positions and career levels are based in London (e.g. BFI, 2017:13; Creative Industries Policy and Evidence Centre, 2019:15, see also section 4).

Furthermore, the use or support for different training provisions differs regarding company size, workers' career stage and experience, as well as access to particular financial and time resources. Fragmentation of the available screen industry training provisions was also mentioned by interviewees in the Work Foundation's study[16] (2017:27), who argued that the industry lacks 'any clear structure and pathways or routes from education to the industry'. These factors suggest that the question of providing adequate training for a 'job-readiness' lies not only within individual abilities or challenges in providing adequate educational support through formally established courses but also in the screen industries structure and work organisation in the sector which translate into significant differences in possibilities to provide on-the-job training.

[15] Informal learning provisions, such as on-the-job training through mentoring or shadowing, are the most prominent practices in the creative industries, including screen industries (see ScreenSkills, 2019a). However, majority of reports avoid the use of the false dichotomy between informal and formal training in the creative (or screen) industries because of blurred boundaries between these two categories. The term 'informal' mostly appears in discussions about non-formal recruitment channels (e.g. networks).

[16] The report focuses mostly on the film industry (with other sub-sectors identified as adjacency industries).

Consequently, screen industry training provisions present highly fragmented landscapes, which deserve separate analyses which cannot be fully provided in this report. This report summarises only major trends observed in screen industry training provision discussions.

Reports about sector training provisions often focus on analysis of creative industries more broadly (see Work Foundation, 2020), which present problems in analysing screen industries' specific needs. Even the surveys of employers in broadly defined creative industries present a vague landscape of various training provisions and the sector's attitudes toward them. According to the Creative Skills Monitor, there is insufficient awareness of **traineeships** and **work placement** opportunities (Work Foundation, 2020:28). Companies not engaged in providing such training provisions cited obstacles including the lack of time, resources and knowledge about how to manage such processes. Furthermore, the report's authors highlighted the fact that most creative industry work placements did not lead to permanent position offers, raising questions about companies' use of interns and work placements due to financial constraints (ibid.). This problem speaks to the wider issue of precarity, difficult working conditions and requirement of unpaid or underpaid work, which prioritises a privileged workforce in screen industry developing careers, particularly when opportunities are in London (e.g. Siebert and Wilson, 2013; Percival and Hesmondhalgh, 2014).

Furthermore, Carey et al. (Creative Industries Policy and Evidence Centre, 2019:27) report that the number of **apprenticeships** used in creative industries remains low across all UK nations (for details see Skills Development Scotland, 2019; StatsWales, 2020). The Work Foundation (Work Foundation, 2017:36) also found that interviewees were sceptical about screen industry apprentice suitability. The reasons for such low interest in the above mentioned training provisions could result from the businesses' distinctive structures within the creative and screen industries, such as both industries being dominated by SMEs and micro-businesses, project-based (often short-term) work organisation and a considerable number of freelancers—especially in the television and film industries.

In the ScreenSkills Employer's Survey (2019), skills gaps and shortages have been mostly approached by investing in some form of training. According to this data source, 60% of employers provided or funded some training for employees in 2018, while 36% did not (Screen Skills, 2019a:46). However, 78% of respondents planned to introduce more training support in the next 12 months—mostly for workers already in the job (53%).

The training's content is important in assessing employers' level of support. According to ScreenSkills (2019:51) data, employers were investing in training in job-specific knowledge (78%), new technology (63%), basic induction training (59%) and health and safety (57%). However, the data does not provide further insights about training content, length or providers used. Future research, therefore, might focus on the content and scope of training arrangements offered by screen industry employers. Furthermore, and in similar ways to initiatives offered to support equality, diversity and inclusion (EDI), training is often not independently evaluated and monitored to assess its screen industry contributions[17]. Or, where evaluation does take place, it is usually done within a limited time period and/or not joined up with other forms of development. The lack of evaluation data is also important to assess other forms of training offered by employers such as on-the-job learning or mentoring (ScreenSkills, 2019:52).

On-the-job training is often cited as the most vital type of training in the screen industry. To learn through employment, individuals '(. . .) take part in various projects, watch others perform tasks, appreciate what production involves, move from "simple" tasks to "high" skilled work.' (Grugulis and Stoyanova, 2009:7). According to survey conducted by ScreenSkills (2019:53), 73% of employers argue that their organisations' future needs would be the best meet through providing on-the-job training. This form of training provides tacit knowledge, which is non-codified, non-explicit knowledge that is gained through 'learning by doing', 'learning by using' or 'learning to learn' (see Howells, 1996). Consequently, tacit knowledge acquisition is associated with direct contact with equipment and work practices in specific contexts while on the job (Howells, 1996; Gertler, 2003). Tacit knowledge is acquired through individual experience and is often related to the original context in which the knowledge was gained, suggesting the importance of collective and social interactions (Lundvall and Johnson, 1994; Gertler, 2003:79). The acquisition and expansion of tacit knowledge in the context of work in the screen industry is particularly important due to various reasons: the lack of formal, codified pathways into the screen industries, the emphasis on experiential learning and the fast-paced development of the screen industries (e.g. variety of business models, required skillsets and technological changes).

Furthermore, the approaches to on-the-job training depend on the socio-historical development of a given screen industry. For example, Grugulis and Stoyanova (2009:23) in their studies on skill development in UK television and film production, argue that increasing the flexibility and casualisation of employment in the sector has

[17] Apart from some schemes using participant testimonies or anecdotal evidence in assessing training provision effectiveness (see ScreenSkills, 2019b).

an impact on how workers and employers approach on-the-job training (see Barnatt and Starkey, 1994; Saundry, 1998). Grugulis and Stoyanova (2009:23–34) argue that:

‘for earlier generations, a combination of formal apprenticeships, barriers to entry and official union structures meant that most spent a great deal of time learning the ropes and acquired a great deal of knowledge in the process. (. . .) Under this system, long periods of learning and time served in jobs were a publicly accepted part of progression. New entrants knew what to expect and were provided with secure employment while working their way up the ladder and acquiring skills’.

The changes in the structure of employment in the sector and an increase in casualisation have an impact on workers’ and employers’ expectations on skill development and the ability to learn through engagement with work-related tasks. Furthermore, this form of work process also contributes to the requirements for faster career progression, and thus, serves as an incentive for workers to constantly search for more prestigious projects. Understanding these changes in the organisation of work in the film and television industry is important when examining phenomena such as ‘show jumping’ or ‘the lack of loyalty from workers’ discussed in the reports about the television industry (see ScreenSkills, 2018/2019).

Regarding the possibility of accessing training provisions a need exists to recognise different screen industry workforce composition, notably higher numbers of freelancers working in some sub-sectors. According to ScreenSkills (2019:47), 84% of employers who responded supported their payroll staff through arranged training or funding for training, with only 33% investing in training support for freelancers. This is concerning, as freelancers make up a significant proportion of the sector, with estimations that around 30% of the workforce is registered as self-employed (compared to 15% UK wide), although it varies across the screen industries (Work Foundation, 2017:7). According to estimations from 2015, around 51% of the film production workforce is self-employed (Work Foundation, 2017:7) whereas in videogames, approximately 4% of the workforce identified as freelancers (Taylor, 2020:12). However, this low number of industry freelancers might be a result of survey distribution method and methodology (Taylor, 2020:12). Considering freelancers’ extremely precarious position in different sectors and limited financial and time resources to invest in their own skills development, a need exists to develop further training provisions dedicated to freelancers. Furthermore, future research into freelancing practices, their working conditions and skills development regarding different screen industry sub-sectors would provide deeper insights into the workforce often excluded from official statistics.

On-the-job training can also be understood within the broader categories of professional or occupational networks and communities (Grugulis and Stoyanova, 2009; Weststar, 2016; Tempest et al., 2004). The importance of such networks and communities is also worth considering, taking into account the fragmented nature of the workforce composition and work processes in screen industries in which online or offline communities play a role in providing training for freelancers, part-time workers and workers from smaller companies which do not have resources to provide specific on-the-job training. Scholars have turned to the exploration of how specific occupational communities[18] allow members to acquire and share knowledge about skill development, production realities, community values, professional attributes, accepted practices and predominant language (see discussion in Weststar, 2016 about game developers as an occupational community). On-the-job training or the acquisition of tacit knowledge, is often cited as superior to more formal forms of training. While this type of training provides an important and often unique opportunity to acquire tacit knowledge about screen production, Grugulis and Stoyanova (2009) argue that the on-the-job model of skill development has some obvious limitations. On-the-job trainings are not created equal and the lack of a formal structure does not provide the means to ensure that learning is understood. Therefore, this type of training places a significant responsibility on both the mentee and the mentor in terms of collaborating on providing adequate and meaningful learning experience. Furthermore, due to the fast-paced nature of screen industries, casualisation of employment relations and job competitiveness, there is a considerable variation in workers' experiences with on-the-job trainings.

3.4 The skills mismatches and training needs identified by particular screen industries

This section briefly presents a synthesis of published reports and academic sources on skills shortages and training needs in the five screen industries: film, television, animation, visual effects (VFX) and videogames. While this section discusses the five industries separately, the structure of the discussions about shortages, gaps and training in specific industries is problematic because of the blurred boundaries between jobs and skills among all the industries. For example, animation-specific roles are also present in the television, film and videogame industries (Animation UK, 2018). The VFX industry has recently been recognised in reports as a separate industry, while historically, it was lumped in with the film, games or animation industries (BFI, 2018; Hope and Livingstone, 2011: Animation UK, 2018). The blurriness among different occupational positions, occupational titles and skills is also a factor in the Shortage

[18] The investigation of occupational communities has been explored in Graeme Salaman (1974) work which indicates relationships between work/non-work related activities.

Occupation List (SOL), which spans interconnected industries, such as games, animation and VFX (MAC, 2019).

Furthermore, the availability and scope of skills reviews in specific screen industries vary not only because of the already identified limitations in the national statistics (see the discussion in ScreenSkills, 2019a) but also because of the different types of reviews (i.e. their varying methodologies) conducted by various institutions (Animation UK, 2018; Ukie, 2019). While some organisations collect data about skills shortages and industry needs, others rarely provide specific information about skills mismatches. For example, the majority of reports draw attention to difficulties in assessing the scope of skills shortages and gaps in the videogame industry (Creative Industries Policy and Evidence Centre, 2019; ScreenSkills, 2019:55). This imbalance in evidence is also visible in discussions on the depth of available resources in the screen industries, as most of these focus on skills mismatches in film and television. Furthermore, this imbalance of coverage is also present in academic research, with more established screen industries (i.e., film and television) receiving most attention.

The purpose of this section is to provide information about the scope and depth of ongoing debates about skills gaps, skills shortages and training needs in the context of screen industries. It also serves as a base for positioning the skills mismatches identified in the next section and in the context of the screen industries based in Yorkshire and the Humber. This section is structured as follows: it presents five sub-sections that discuss each of the five screen industries. Each of the sub-sections report on the data on skills shortages, skills gaps and training in the screen industries.

3.4.1 Film

The film sector is divided into three sub-sectors: production, distribution and exhibition. The industry employs approximately 66,000[19] people in the United Kingdom, with 70% working in production (BFI, 2017:12). The workforce is characterised by a high percentage of self-employed workers, approximately 51%, or 2,4000 workers. The industry features various occupational roles with skill sets that span the VFX and television industries. Furthermore, the industry is highly London-centric, with the majority of production companies based in the capital (65%; Work Foundation, 2017). Unsurprisingly, the majority of training provisions are also available in London and Southeast England (Work Foundation, 2017; BFI, 2017). In recent years, the industry underwent rapid growth that raised questions about skills shortages and skills gaps as well as competition for skilled workers among different companies and screen industries. For example, high-end television productions often recruit from the similar

[19] Based on data from 2015.

labour pool that film productions target (BFI, 2017:12). Covid-19 and post-Brexit regulations are ongoing challenges that have already and continue to have impacts on the film industry and its sub-sectors.

Skills shortages

According to ScreenSkills (2019:33) survey, skills shortages are prevalent in the film industry and are mostly visible in production (32%). [20] The synthesis of main occupations which experience skills shortages in the film industry are presented in the Table 3.1a They are not only reported by major companies but also independents (ScreenSkills, 2019a:33). Independent companies often experience difficulties recruiting staff because larger productions offer more prestige, stability and financial renumeration than independents (Work Foundation, 2017:13/19). According to interviews conducted by the Work Foundation (Work Foundation, 2017:21), the skills shortages experienced by major and independent teams lead to their hiring junior crew members or professionals below the required skill and experience level. Hiring underqualified professionals leads to shortages in junior positions and also has the potential of impacting production budgets, whereas hiring underqualified newcomers affects production deadlines (ibid., 21). This trend was also reported in the context of HETV production (Screen Skills, 2017). Changes in business models as well as the application of new technology created skills shortages and skills gaps in the film industry by increasing the necessity to develop, market and sell films in different ways (e.g. thinking about audiences and platforms; see introduction).

ScreenSkills (2019)	**BFI (2017)**	**Work Foundation (2017)**
Production		
Production accountants Script supervisors Location manager Art Director	Production accountants Location managers Line producers First assistant directors Script supervisors	Script editors Producers Production accountants Production managers Programming
Distribution		
Distribution: Technical department: Electricians First assistant camera,	Business/financial analysts Rights and sales analysts	Animation sales Legal Discoverability and monetisation
Exhibition		

[20] Skills shortages are least likely to be reported in distribution (8%).

Projectionists	Curators Cinema programmers General managers Technical skills Big data analysts	Digital content and audience choice Finance and legal Leadership and people management
Craft		
	Costume designers Costume prop makers Costume jewellery Hair and make-up	
Technical		
Electrician Gaffer Sound re-recorder mixer Grip	Carpenters Specialist plasters Riggers Finishing Gaffers Film camera technicians	
Post-production		
	VFX effects VFX rigging VFX composition Sound effect Editors	Sound-recording Previsualisation Computer animators Post-production executives Mixes and recordist

Table 3.1.a skills shortages in the UK film industry

Skills gaps

In a ScreenSkills survey (2019:40), 61% of film industry employers stated that their workforces and freelance pools are characterised by skills gaps, and this figure was broken into production (55%), exhibition (68%) and distribution (58%). Skills gaps were presented in different reports that spanned from indicating jobs in which the skills gaps were observed the most frequently (ScreenSkills, 2019a) or in reference to general skills gaps (Work Foundation, 2017:24). Work Foundation interviews (Work Foundation, 2017) revealed that new entrants lacked “soft skills” (see table 3.1.a, see the discussion about ‘soft skills’ section 2.3.2 Skills gaps) rather than technical skills. Technical skills (understood mostly as a knowledge about specific software[21]) were

[21] In the context of animation, VFX or videogames – the broad term 'technical skills’ is mostly discussed in relation to knowledge and abilities to use a specific software. However, in context of television and film production, it refers to the abilities of using specific hardware (e.g. roles in technical or craft

raised mostly in discussions about frontline technical workers and in post-production (Work Foundation, 2017).

ScreenSkills (2019): Jobs in which observed skills gaps.	Work Foundation (2017:24): 'general' skills gaps
Production accountants Production managers Producers Projectionists First assistant director Line production Line producer Editor Production designer Script supervisor Location manager VFX supervisor Programmer	Soft skills/attitude/communication and teamwork Familiarity with new technology Problem solving, research and analytical skills Creative and technical fusion Management, negotiation, financial, legal skills Foundation skills ('set ready') Management and leadership skills

Table 3.1b skills gaps in the UK film industry

Training

Film education in both higher education (HE) and further education (FE) was debated by respondents in the key reports reviewing skills in the U.K. film industry (Work Foundation, 2017;ScreenSkills, 2019; BFI, 2017). These sources reported interviewees' scepticism regarding the quality of skills provided by HE and FE courses. In other words, respondents believed that graduates are not ready to join the industry and are not in possession of soft skills (defined as personality, attitude or being a self-starter) or technical skills (especially in the context of post-production; BFI, 2017:16; Work Foundation, 2017:22). It has also been reported that graduates do not possess knowledge about the depth and breadth of roles in the film industry (BFI, 2017:16), particularly regarding less visible roles, such as those in accounting or construction. These studies also reported that graduates are not prepared to work in the industry

departments). Various approaches to defining 'technical skills' also raised questions about the use of particular terminology and categorisation of skills in surveys and discussions about skills mismatches (see section 2.3.1).

after graduation and that further emphasis should be placed on the importance of apprenticeships (BFI, 2017:16). A solution for this situation is the establishment of reliable and accessible resources for prospective workers, teachers and parents that provide advice on occupational positions and career pathways in the screen industries (BFI, 2017; Work Foundation, 2017). However, this approach does not take into an account that a difficulty in providing reliable information about occupational roles and career pathways is also associated with organisation of production and work in the screen industries (see section 2.3.2 Modes of Training). Consequently, presenting prospective workers through the lens of 'deficit model' through which responsibility for learning is placed mostly on an individual worker rather than on the systemic issues (see section 2.3.1).

Reports analysing HE and FE screen industry courses often draw attention to the popularity of film and television courses, such as those that are vocational or more general (e.g. 'studies' degrees vs production-focused degrees). While these reports have raised concerns about courses that are general in nature and do not focus on practical or vocational training, further work is needed to establish which graduates intend to work in the screen industries, as the high enrolment of students in media and communications courses does not necessarily mean they plan to work in the screen industries. However, students from other courses that are initially not related to the screen industries might want to work in them. There is also a need to expand the industry's outreach to people with diverse skills. Such ideas demonstrate the need for understanding not only the specific needs of the industry but also the broader educational provisions offered by universities and other educational institutions. Overall, interview data from the Work Foundation (Work Foundation, 2017:28) report showed that the current landscape of training and skills provisions is fragmented, confusing and concentrated mostly on new entrants who lack practical experience in many vocational and educational courses (mismatches between students and industry expectations).

These discussions encompass not only consideration of possible training provisions for new entrants but also problems with access to Continuing Professional Development (CPD) training (BFI, 2017). The BFI study acknowledged that most CPD activities are developed informally with employees who often lack access to high-quality, industry relevant courses that contribute to the progression of their careers (BFI, 2017:16). A considerable problem was also identified in the scarcity of short courses and modular approaches to skills training, including CPD (Work Foundation, 2017: 28). This situation raises issues from a regional perspective, as the majority of courses are London-centric, and often not accessible to everyone because of required financial and time resources. Furthermore, the short notice many screen industries workers get for jobs, means signing up and paying for training courses is not attractive

if refunds are not available. According to data from ScreenSkills (2019:48), 57% of film industry employers provided training to their workforce in the last 12 months. This includes 74% of employers in exhibition, 58% in distribution and 44% in production. In comparison to other screen industries examined in the same survey, film production employers offered the least amount of training to their workers. Furthermore, employers were also less likely to support their self-employed workers, with only 15% providing some form of training to freelancers.

Interviews, conducted by the Work Foundation, with industry stakeholders demonstrated the importance of preparing new entrants and other prospective workers (e.g. those changing careers) in developing the skills and knowledge required to launch a freelance career in the film industry (Work Foundation, 2017:30). This ranges from knowledge of one's finance, negotiation and legal skills to the development of professional networks. The problem of establishing support for freelancers stems from the management of their work in which not only the cost of training but also the time devoted to it requires time off that potentially translates into missed employment opportunities.

3.4.2 Television

Data about the television industry is often presented according to genres (sectors) which represent production of specific content from, for example, high-end television (HETV), children's television and unscripted television. The UK television industry employs approximately 38,331 people (Ofcom, 2019) and is highly reliant on freelancers, who comprise approximately 19,849 workers across all the UK television industry services. In recent years, the UK television industry has undergone rapid growth; in 2018, total revenues within the UK television production sector grew to over £3 billion (Oliver and Ohlbaum Associates, 2019:3). As many reports emphasise, the rapid growth of the sector has been driven by international commissions, largely supported by consumer spending on international SVOD services such as Netflix and Amazon (e.g. Oliver and Ohlbaum Associated for PACT, 2019). According to the Oliver and Ohlbaum report (2019:3), income from SVoD commissioning increased to £280 million (from 2017 to 2018) and accounts for 40% of all international commissioning income. This growth has also contributed to increasing difficulties in recruitment for television productions (skills shortages) and further highlights skills gaps in the existing workforce. The majority of reports on such skills mismatches focus on problems identified among productions and crews specialising in HETV (see, for example, the annual assessment of skills mismatches in HETV provided by ScreenSkills). The television industry workforce has been significantly affected by the COVID-19 pandemic, both in terms of being able to work under imposed restrictions and accessing training provisions (see FilmTVCharity, 2020, Swords, 2020).

Skills shortages and skills gaps

According to ScreenSkills (2019:3), the UK television industries are experiencing recruitment difficulties, with 31% of employers in HETV, 34% of employers in unscripted TV and 38% of employers in children's TV experiencing problems with skills shortages. According to a more detailed exploration of skills mismatches in HETV (ScreenSkills, 2020:2), skills shortages in this sub-sector are perceived as 'serious' or 'very serious' (81%). Furthermore, according to 53% of people interviewed, skills shortages and skills gaps issues have been getting worse over the last 12 months[22] (ScreenSkills, 2020:2). Skills shortages concern different levels and grades of employees, including line producers, production coordinators, directors, first assistant directors and location managers (Skills Screen, 2019; see table 3.2a for details).

Not all sub-sectors of television production have been reviewed for skills mismatches among their workers. However, ScreenSkills (2017:2020) provides annual evaluations of the needs of HETV workers, and these evaluations are worth closer examination. A study conducted by ScreenSkills demonstrates that skills shortages are widespread and have an impact on the organisation of crews and the further development of the sector. Namely, the growing demand for crews and the increasing number of productions have resulted in a lack of qualified workers (ScreenSkills, 2020). This situation has also resulted in different productions competing over skilled workers and studio space. The ScreenSkills report also highlighted that UK productions were concerned with the number of US SVoD productions, which offer prospective workers higher renumeration and often a possibility to work on bigger, more prestigious productions (ScreenSkills, 2020:5). Consequently, the interviewees reported increased crew rates; crew members stepping up to roles too soon; lack of choice over the recruitment of crew members; and limited possibilities for hiring a diverse workforce (ScreenSkills, 2020:9). Nevertheless, the practice of stepping up was not considered an entirely negative approach to career development, as it is recognised that creative workers' skills development takes place mostly on the job. Furthermore, this approach should also be positioned within the context of work organisation and the increasing casualisation of employment in the television industry, whereby faster career development is expected from workers, along with increasingly limited possibilities for acquiring additional training[23] (see Grugulis and Stoyanova, 2009). Therefore, stepping up is a good thing for the industry, as long as it is done properly. However, as the ScreenSkills (2020:16) report demonstrated, crew shortages and the

[22] Data from 2019

[23] Additional training is understood here as requiring an extra commitment of time, financial resources or access (with the majority of training provisions based in London).

lack of proper support for workers in the industry may result in the adoption of poor work practices, further demonstrating the possible inadequacies of on-the-job training.

The most widely cited solution for skills shortages encountered in the HETV industry was to promote crew members early, beyond their experience levels. On its own, this practice was not perceived as necessarily harmful for productions. However, with a lack of senior staff members to support and supervise newly promoted crew members, productions can be slowed down or encounter budgetary problems. Furthermore, interviewees argued that the growing number of productions results in crew members being 'opportunistic', which leads to 'show-jumps' before the end of production (ScreenSkills, 2020). This situation increases uncertainty in the production process and may cause delays in finding replacement crew members in a very short time. The 'show-jumping' practice should be considered within the context of the industry structure, which—through promoting individualisation and portfolio-building—actually encourages this type of behaviour. As stable and secure jobs are scarce in the industry, there is no traditional manner of perceiving 'loyalty' to an employer or particular production while employees search for better portfolio-building prospects (see Grugulis and Stoyanova, 2009). The interviewees in the ScreenSkills report also drew attention to the increased rates among workers and freelancers because of the developed 'employee-oriented market'. However, such claims about rates are mostly anecdotal and should be further explored through analysis of actual salaries and rates at different grades in the television industry. In extreme cases, according to the interviewees, the skills shortages also lead to UK crews missing out on work opportunities.

In comparison to other screen industries, skills shortages were not mentioned in relation to Brexit and access to international talent in the context of HETV (ScreenSkills, 2020). Skills shortages were only discussed in the context of VFX industries' roles and skills. The reason for this is that HETV did not hire, in comparison to an extensive EU and non-EU workforce in VFX, animation or videogames.

ScreenSkills (2020) HETV	ScreenSkills (2017) HETV	ScreenSkills (2019) Unscripted
Production accountant	Production accountant	Editor
Location manager	Production co-ordinator	Series producer
Production coordinator	Location manager	Production accountant
Line producer	Producer	Production coordinator
1st AD	Grip	Edit producer

Editor	Script supervisor	Executive producer
Producer	Trainees	Archive researcher
Assistant production accountant		
Production manager		
HR professionals		

Table 3.2a skills shortages in the UK television industry

ScreenSkills (2019:40) also reports on skills gaps in the television sector in general, with 39% of employers in HETV, 38% of employers in unscripted TV and 23% of employers in children's TV reporting skills gaps. The skills gaps identified in the television industry broadly reflect skills gaps observed in other screen industries, which include difficulties with interpersonal and communication skills, management and leadership skills and project management skills (see table 3.2b). ScreenSkills' (2020) review of skills gaps in HETV also draw attention to skills gaps related to HR practices and resources. These skills gaps present significant challenges to the industry not only in terms of organising and crewing up productions but also in terms of creating better working organisations and conditions (see ScreenSkills, 2020:4–5).

Skills Gaps TV (ScreenSkills, 2019a)
Financial skills
Leadership
Management
Planning and organisational
Communication and interpersonal
Problem solving
Project management
Resilience
Supervision

Table 3.2b skills gaps in the UK television industry

Training

Studies that investigated development of the UK television industry, and changes in approaches to skills acquisition in the television sector, demonstrated that the increasing fragmentation and casualisation of employment in the television industry had an impact on employers' and workers' expectations of training needs (Grugulis and Stoyanova, 2009). These changes in approaches to work organisation in the

television industry '[encourage] and support rather different behaviours to those fostered by a skill formation system based on lifetime employment and strong internal labour markets and we might expect technical skills to be combined with strong social skills, impression management and self-presentation as opposed to, perhaps, loyalty, independent judgment and rigorous professional standards' (Grugulis and Stoyanova, 2009:2). Therefore, approaches to training in the television industry should be positioned within the further context of socio-economic changes that have an impact on the work organisation but can also change creative workers' approaches to skills development. Consequently, behaviours and practices identified in the reports about skills mismatches in HETV indicate creative workers' adaptation to different work organisation (e.g. increasing casualisation) and career progression (e.g. expectations of faster progression).

In relation to television industry employers' assessments of training availability in the last 12 months, ScreenSkills (2019:46) reported that 66% of HETV employers, 72% of unscripted TV employers and 73% of children's TV employers offered training to staff and freelancers. Unsurprisingly, the majority of training support was offered to workers on a payroll (correspondingly, 85%, 90% and 80%), and less was offered to the freelance workforce (51%, 55% and 40%). However, in comparison, the television industry offers more training support to freelancers than does the film industry.

Interviews conducted as a part of a ScreenSkills (2020) report revealed that due to the high demand for crews, creative workers in the television industry cannot afford to have adequate downtime between projects to attend to their mental and physical wellbeing and invest in training. Furthermore, with the majority of training provisions offered in London, the financial and time commitment from creative workers based in other nations and regions is problematic. However, as the report revealed, in comparing data collected in 2017 and 2018, there is an increasing awareness among production managers about crew members' needs for training, holidays and family commitments (ibid.). Interviewees also discussed possible solutions to increase skills development and facilitate training in the industry. These included the incentivising of productions to take risks on new talent; training subsidies for all grades; information and technical support; work experience and mentor schemes; expense funds for new entrants; and investments in 'soft skills' (leadership and management skills development) (ScreenSkills, 2020:12).

3.4.3 Animation

Information about skills shortages, skills gaps and training in the animation sector comes from different and often fragmented sources (Animation UK, 2018; Olsberg SPI, 2017; Creative Skillset, 2016). However, because the jobs in the various screen

industries are similar, information about the skills mismatches that characterise them can be derived from reports assessing the industries as a collective (Work Foundation, 2017).

Data from the Creative Skillset Census (2015) estimates that there are around 7,750 workers in the UK animation industry. Animation UK[24] estimates (2018:7) that there are 10,000 workers employed directly and indirectly the UK animation industry. However, because of the high participation of freelancers in the animation industry and their absence or various classifications in the data, the participation of a workforce in the UK animation industry the figure could be higher (see Animation UK, 2018). This view is also supported by the recent ScreenSkills (2019) skills assessment report in which animation-sector employer respondents confirmed that they worked with freelancers. Furthermore, the structure of the animation industry varies among freelancer workers, small animation studios and major companies (Animation UK, 2018:19); the size of specific companies and services they and individuals offer also impacts what kind of skills and training are needed to perform a given job in the sector. Furthermore, as animation-related occupations and skills are applicable in other screen industries, the impact of skills shortages and gaps in this sub-sector is relevant to others, such as the film or videogame industries.

Skills shortages and skills gaps

The persistence of skills shortages is emphasised in various sources that collected data from employers and employees in the animation industry (ScreenSkills, 2019; Animation UK, 2018). ScreenSkills (2019) reported the animation sector experiences specific recruitment difficulties that are noticeable mostly in regions with a high density of animation and animation-related companies (i.e. London and Southeast of England). In the report, 48% of employer respondents reported skills shortages (ScreenSkills, 2019:33). Other reports focused only on the animation sector and presented an even higher number of employers reporting skills shortages: Animation UK (2018) reported 66% and Olsberg SPI (2017) reported 74%. In the reports' analyses of skills shortages in the sector, storyboarding and 2D and 3D production skills were the most frequently cited.

Evidence of problems with recruitment and skills shortages was also visible in the number of animation sector (and the VFX industry) jobs identified in the Shortage

[24] Animation UK's (2018) report was based on analyses of various sources, such as an online survey conducted in November 2017 (87 individuals; 9% response rate), Olsberg SPI (2017) research on employers in the animation industry and national statistical data and related reports in the screen industries.

Occupation List (SOL), which surveys 29 industry positions (additionally, see Animation UK, 2018:23). Furthermore, the Animation UK (2018) report documented that 34% of employers are already experiencing the impacts of Brexit, which are understood as difficulties in talent and student recruitment in the European Union, difficulties in retaining European staff and concerns about costs associated with administration and visa applications (Animation UK, 2018). New immigration rules and their impacts on industry skills shortages were particularly concerning for the animation sector because it employs a high proportion of workers from outside the United Kingdom (Animation UK, 2018:14-16).

According to data from ScreenSkills (2019), 48% of animation sector employers reported skills gaps in their workforce. The roles most commonly identified as characterised by skills gaps were those of animators, 2D animators and storyboard artists (ScreenSkills, 2019a:39). In Animation UK's (2018:23) data, 31% of respondents reported skills gaps. Animation UK (2018:23) reported skills gaps on the level of 31%. In Olsberg SPI's (2017) data, 51% of respondents reported skills gaps. The reporting of skills gaps is not only about how sever they are according to employers but also what kind of problems they concerned. In the animation industry, the most common skills gaps concerned ability to use specific software to project management skills (Animation UK, 2018:10).

Screen Skills (2019a:36)	Animation UK (2018:8)	Olsberg SPI (2017)
Storyboard artists	Animator	Storyboard artist,
Animators	Production Management	2D animators
Art Directors	Storyboard artists	Business Development
Animation Designers	Production staff	Commercial roles
2D animators		Producers
Rigger		3D animators

Table 3.3a the most frequently reported skills shortages in the UK animation industry

Shortage Occupation List (SOL) (2019/2020)	
Roles already on the List (before 2019)	Requested new roles (added in October 2019)
2D Supervisor 3D Supervisor CG Supervisor	Creative Director Concept Artist Storyboard Artist Technical Artist

Technical Director (includes – Effects TD, Crowd TD, Creature TD, Lighting TD, Pipeline TD and Generalist TD) Animator Compositing Artist Matte Painter Modeller Rigger (Animation) Stereo Artist Texture Artist Systems Engineer Software Development Shader Writer	Layout Artist Pre-viz Artist (current applications use Animator role) Production Coordinator (Brexit will create a shortage in this role) Assistant Technical Director Render Supervisor

Table 3.3b related occupations reported and added to the Shortage Occupation List

ScreenSkills (2019)	Animation UK (2018:24)	Olsberg SPI (2017)
2D animators	Software skills (unspecified)	Storyboard
Animators	Storyboard	Production Management
Storyboard Artists	Production experience	
	Graduates with inadequate skills to work in the industry	
	Rigging	

Table 3.3c skill gaps in the UK animation industry

Training

Information about the training provided and needed in the animation sector varies greatly in terms of the available data and data collection methods. According to aScreenSkills (2019) comparison, employers in animation (48%) and film production (44%) are less likely than the other screen industries to invest in training. According to data from Animation UK (2018:31), 55% of employers from the animation sector did not invest in any training, while those who engaged in training support did so through company-based training (85%), engagement in supporting colleges and universities (44%) or engagement in outreach work (31%). However, the ScreenSkills survey asked about training provided in the last 12 months, while the Animation UK survey asked about training provided in the last five years.

According to Animation UK (2018:10), training is common in the sector: 61% of employers said they knew someone who attended training in the last five years. The most commonly referenced training corresponded with the above-identified skills gaps and was mostly often related to management or software, such as training in Toon Boom, CelAction and project management software. Respondents also indicated that the most critical areas of sector training were creative (which the survey did not define), project development and related to production, while the least important were finance, business and legal skills (Animation UK, 2018:25). Respondents also agreed that there was a need for investment in further training on CPD activities (Animation UK, 2018:32). Furthermore, while approaches to training are mixed and based on fragmented evidence, ScreenSkills (2019:46) data demonstrates that, in comparison to other screen industries, the animation sector is among the most likely of the screen industries to provide training to freelancers (43%). However, those companies that provide training are still more likely to invest in it for payroll staff (85%).

3.4.4 VFX

The VFX sector is a key part of the UK's film, television and animation industries (see also BFI, 2018). Animation UK (2018: 14) estimates that approximately 30% of the VFX sector workforce comprises animation-related occupations, indicating a cross-over of occupations and skills among the different screen industries related to VFX production. This is also evident in that problems with skills mismatches in the VFX industry are reported in the context of other screen industries (e.g. film, videogames). The UK Screen Alliance (2017 cited in UK Screen Alliance, 2019) provides more comprehensive data about the VFX industry; it estimates that 8,140 workers (FTE) are directly employed in the VFX industry, with 17,940 workers employed in related occupations (including VFX roles in TV and film as well as the broader economy). The majority of people in VFX work under permanent contracts (e.g. 43% of the VFX in film and television); 50%, with only 3% of the sample working as freelancers (Animation UK, 2018). According to the UK Screen Alliance (2020), work flexibility was introduced to the industry through fixed-term contracts, the majority of which are longer than six months (43%). Nonetheless, VFX companies tend to work heavily with freelancers, with 83% of employers reporting such cooperation (ScreenSkills, 2019a).

Skills shortages, gaps and training

In terms of data about skills shortages, gaps and training needs, there are comparatively fewer resources supporting in-depth discussions about these issues in the VFX industry. The reason for this is that data about VFX is fragmented and often included in reports about other screen industries (e.g. film, animation and videogames); it is mostly treated as an adjacent industry. However, because of the

vital and various roles VFX plays in the screen industries, there is a need to research and provide further insights about this sub-sector[25].

ScreenSkills (2019) data demonstrate that VFX companies face difficulty in role recruitment (reported by 58% of the employers surveyed). Such difficult-to-fill roles include production accountants, FX technical directors, pipeline technical directors, FX artists, lead digital matte painters and senior Houdini generalists (Ibid.: 35). Problems with skills shortages were also visible in discussions about the introduction of new immigration laws, as in the case of the animation industry (VFX, 2020). The VFX workforce tends to be highly international, with 27% of people from the EU and 11% from the rest of the world (VFX, 2020). The shortage occupation list (SOL) also includes a variety of occupations that are vital in the VFX industries; however, these mainly refer to senior occupational positions (defined as 5+ years of experience). Of the VFX employers surveyed (n = 40), 42% admitted to skills gaps in their workforce (ScreenSkills, 2019: 40). The main roles affected by skills gaps include account managers, CG supervisors and VFX artists (ScreenSkills, 2019: 40).

Screen skills (2019a)	SOL (2019/2020)
Production accountants	VFX Supervisor
Fx technical director	VFX Producer
Pipeline technical director	VFX Production Manager
Fx artists	VFX Editor
Lead digital matte painter	VFX Trainer
Senior Houdini generalist	

Table 3.4a skills shortages in the UK VFX industry

In terms of providing training to the workforce in the last 12 months, 67% of VFX companies offered continuing education to their employees, with 50% also providing training support to freelancers and 100% to payroll staff members (ScreenSkills, 2019). A discussion about the training needed to support the VFX industry's development also appeared in the NextGen report (Hope and Livingstone, 2011)[26], which identified problems with educational provisions in schools and HE regarding ensuring graduates had the skills relevant to developing the industry. The authors argue that this education is poor-quality, and that further attention should be paid to

[25] In their report about Screen Businesses, the BFI (2018) defined VFX as a core part of the screen industries, and not just in terms of its supply side. Information about the VFX industry is mainly provided by the UK Screen Alliance.

[26] Hope and Livingstone (2011) find that this is the most recent document concerning skills and training needs in the videogame and VFX industries.

the STEM subjects needed to develop highly skilled workers in the VFX and videogame industries.

3.4.5 Videogames

According to Ukie data (2019), the videogame industry currently employs around 30,000 FTE workers (see also ScreenSkills, 2019:19). It has been estimated that workers are primarily hired on permanent full-time or fixed-term contracts (Taylor, 2020). However, employers from the sector admitted that 73% of the companies also cooperate with freelancers. Therefore, further data is needed to assess the work of freelancers in the sector and their occupational division. As mentioned by various previous reports assessing skills in the screen industries, there is a significant gap in assessing data about the videogame industry and further skills in the context of the industry. National statistical data and skills assessments have not captured the variety of companies operating in this sector as well as variety of occupational roles (ScreenSkills, 2019:55; Creative Industries Policy and Evidence Centre, 2019).

Reviews about skills gaps and shortages in the videogame industry tend to be included within broader overviews about other screen industries, in certain cases even approaching videogame, animation and VFX as industries adjacent to the film industry (e.g. Work Foundation, 2017/2019). These reports identify broader areas of concern in the screen industries, which are also present in the videogame industry, such as lack of awareness among learners, parents and educators about career pathways and prospects in the industry as well as a mismatch between educational provisions and being 'ready to work' in the videogame industry (see Creative Industries Policy and Evidence Centre, 2019). Reports which focus on skills development in the videogame industry often discuss the lack of adequate educational support in preparing graduates to work in the industry, especially in relation to proficiency in STEM subjects (e.g. Hope and Livingstone, 2011; TIGA, 2015). Most of these reports focus on skills development in the context of school education or higher education (e.g. Hope and Livingstone, 2011), while other educational provisions, such as apprenticeships, non-traditional entry into the industry and issues associated with CPD are comparatively less frequently mentioned (apart from TiGA, 2015).

Skills shortages and skills gaps

According to data from ScreenSkills (2019:33-35), 49% of employers experienced recruitment difficulties in the videogame industry. The most cited roles which were affected by the skills shortages included the following: general programmer, senior programmer, art director, animator, producer, AI programmer and technical artist.

The concern of the videogame industry is prominently visible in the number of related occupations included in the Shortage Occupation List (SOL) and engagement of the sectoral bodies in raising the issue of changes in immigration regulations (see TIGA, 2015; Ukie, 2017; Ukie, 2019). This shortage is not surprising because there is a global shortage of skilled workers in the videogame industry. This shortage is worsened because of the specificity of particular segments of videogame production, software and game genres. As the Migration Advisory Committee (MAC) review states, 'a large proportion of the job titles requesting to be put in the SOL for the Creative Industries are those which require STEM skills, for example videogame, VFX and animation. Companies have to compete for high skilled roles which require IT skills with other high paying industries, for example financial sector' (2019:256). The following are some examples of these roles: 3D artist, technical artist, animator, art director, VFX artist, character artist, UI artists, lighting artists, technical animator, storyboard artist, previsualisation artist and layout artist (MAC, 2019:259). Furthermore, the MAC report also acknowledges that SMEs in the game sector struggle to compete with other industries which seek to hire highly skilled technical workers (e.g. financial sector) (MAC, 2019). However, positions in the videogame industry are not as well remunerated as positions in non-entertainment software development. In addition, the most sought-after workers are among those defined as having medium to high skill levels (MAC, 2019:269).

The problem of global competition for skilled workers and skill shortages was emphasised 9 years ago as a problem of the UK videogame industry (see Hope and Livingstone, 2011). Currently, there is also increasing concern about the imposition of new immigration rules in attracting an international workforce. Bakhshi and Spilsbury (2019) found that 70% of videogame companies are concerned about obstacles in the recruitment of a workforce from outside of the UK after Brexit. Data from Ukie (2017) demonstrate that 38% of employers are already experiencing problems with Brexit and skills shortages. It has been estimated that 57% of game companies hire EU workers (38% hiring their workforce from outside of the EU), and EU workers encompass 34% of their headcount (17% outside of the EU) (Ukie, 2017). Most workers from the EU are employed as programmers, artists and senior managers, while workers from the rest of the world tend to be employed as programmers, senior managers and data analysts. With workers from the EU mostly based in programming, artists and senior management and rest of the world in programming, senior management and data analytics. This concern is also evident in a response to the MAC review provided by Ukie (2019), which argues that companies hire international workers primarily because of a lack of candidates with the required skills and experience in the UK.

In comparison to skills shortages, discussions about skills gaps are less visible in reviews about the game industry workforce. 37% of employers from the videogame

industry agreed that their workforce has skills gaps (61% said that their workforce did not have any skills gaps) (Screen Skills, 2019a:40). The following job roles are most affected by skills gaps: programmer, 3D animator, 3D character rigger, community manager and game developer (ibid:36). Therefore, the skills gaps concern mostly 'technical knowledge' rather than 'general skills' as discussed, for example in the case of the film industry.

Skills shortages (Screen Skills, 2019a)	Skills Gaps (Screen Skills 2019a) affected jobs
General programmer	Programmers
Senior programmer	3D character animator
Art director	3D character rigger
Animator	Community manager
Producer	
AI programmer	
Engineer	

Table 3.5a skills shortages and occupations effected by skills gaps in the UK videogame industry

Training

Discussions about specific skills, expertise and job divisions in given screen industries are dependent on the sociohistorical and economic development of a given screen production. While there is currently a broad range of formal and informal forms of training not only in the UK but also around the world (see Nichols, 2014), higher education courses in videogame development do not pose the same type of cultural legitimacy as HE and FE courses for film, television or animation production. Historically, videogame development is strongly associated with the ethos of 'home brew' or 'bedroom' coders' who were self-taught, using informal channels to access required knowledge and self-develop their videogames (see, for example, Donovan, 2009). Therefore, a focus on practical skills and experiential knowledge is often prioritised over any type of formal training. This is especially evident in the industry's focus on recruiting people from already-available 'passionate' videogame players through, for example, modding communities[27] (see Postigo, 2007; Sotamaa, 2010). In other words, as O'Donnell (2014) argues in his ethnographic study about videogame production in the US and India, to be able to make games in the industry, one needs to make games before breaking into the industry.

[27] Fan-based communities which specialised in providing different types of digital modifications to published games.

According to the UK Game Census (Taylor, 2020:44), 81% of videogame workers are educated at least to the degree level,[28] and while indeed the most common subject areas among workers consist of STEM subjects, around 69% workers hold their highest qualifications in another subject. Furthermore, according to the UK Game Census, approximately 27% of game workers hold game-specific qualifications while 42% study other subjects, such as arts, humanities and social sciences (Taylor, 2020:44). Game-specific qualification is mostly prevalent in what the census authors define as 'core' game production roles, such as design art, QA and programming (Taylor, 2020:46).

In the policy and industry reports, the overall videogame industry (sometimes alongside the VFX industry) is defined mostly through the prism of skills shortages associated with STEM education and related training provisions (see Hope and Livingstone, 2011; TIGA, 2015). Early reviews of skills shortages in the videogame industry discuss the poor quality of computer science and videogame courses (such as high school and higher education courses) in delivering 'ready to work' graduates (see Hope and Livingstone, 2011). Despite the growing number of videogame courses (both degree courses and short-term courses), the industry is characterised by scepticism of formal training and especially tensions between game-specific courses and 'traditional' STEM education (Hope and Livingstone, 2011).

In terms of approaches to continuous professional development in the videogame industry, reports demonstrate that the majority of training provisions for game workers are supplied by private providers. This makes this training expensive, especially for smaller businesses within the industry (see Hope and Livingstone, 2011; TIGA, 2015). According to data provided by TIGA (2015), 85% of UK game developers provide some form of training to their employees. However, only 8% of these additional training provisions lead to some form of qualification. In the last 12 months (as of 2018), 49% of respondents from the game industry had organised some form of training for their workforce and freelancers (ScreenSkills, 2019). Those who offered training focused primarily on supporting staff members (94%), with only 13% supporting freelancers (ScreenSkills, 2019). Furthermore, through such lobbying bodies as TIGA (2015:19), the videogame industry was supporting the introduction of educational outreach, CPD for staff and SME-training tax relief to allow businesses to offset training costs.

[28] In comparison to 23% of the overall UK workforce.

4. Skills shortages, skills gaps and training needs in the Yorkshire and the Humber

4.1 Introduction

This section focuses on skills shortages, skills gaps and training needs in Yorkshire and the Humber. It is based on a review of published reports (2018–2019) and interview data[29] collected between September 2020 and November 2020 with people in the screen industries that support screen production in the region and nationwide. This section focuses primarily on skills mismatches and training needs in the context of the film, television and videogame industries.

A summary of the findings from the analysis of the published reports and interview data about screen industries in Yorkshire and the Humber and interview data is presented below:

4.2 Data

Accessibility and granularity of the published data: There is a scarcity of data about skills shortages, skills gaps and training needs in the region. Data about Yorkshire and the Humber tend to appear in general overviews about skills mismatches in the UK, regionally and nationally (e.g. ScreenSkills, 2019). Furthermore, national statistical sources (e.g. Employer Skills Survey (ESS)) do not provide an adequate level of granularity of data to discuss occupational shortages with a focus on the screen industries in a given region. While there are unpublished reports about skills mismatches and training needs in Yorkshire and the Humber, they are not publicly accessible.

4.3 Scope

Yorkshire screen production in relation to screen industries production in other regions: The interviewees in this study suggested that the in-depth analysis of the skills mismatches and training needs of the screen industries in the region would be beneficial for Yorkshire-based companies and workers and provide a better understanding of the landscape of screen production in the UK. The density, distribution and structures of the companies, workforce and needed skills in the region demonstrate tensions and challenges in developing workforce skillsets in the regional context. Therefore, future investigations of regional skills mismatches should also

[29] Based on 11 interviews (please see the list of interviewees in the appendix 1).

consider the relations among major hubs for screen industries production, the location of the training provisions and workers' mobility (e.g. disparities between where freelancers are based and where they work).

Differences within the region: However, it is not only about the investigation of the region itself but also about recognising differences within the region in terms of the location and scope of the screen industries productions and workforce. The interviewees drew attention to specific skills shortages and training needs depending on the location of the screen industries companies in Yorkshire, for example the availability and needs of workforce with particular skillsets in Leeds, Sheffield, Hull, Bradford or York.

4.4 Focus

Regional understanding of and expectations about skills: To understand skills shortages, skills gaps and training needs in Yorkshire, it is vital to pay attention to the structure, size and the stage of development of the screen industries companies in the region. While the interviewees in this study identified skills shortages and skills gaps in the screen industries workforce, which could be also observed at the national level, the understanding of the given skills and the level of expertise needed for the region can differ among different regions. The interviewees argued that creative workers in Yorkshire and the Humber need to have a variety of skills to adjust to the uncertainty of screen industries production and to the variety of productions in the region.

Reporting on skills shortages and skills gaps in Yorkshire: According to the ScreenSkills (2019) report, in the last 12 months, 41% of the employers based in Yorkshire and the Humber experienced recruitment difficulties and 38% reported skills gaps in their workforce. The interviewees also observed skills mismatches in the creative workforce based in Yorkshire. However, some of the reported skills shortages can also be present, nationwide (e.g. production accountants, C++ programmers) as well as specific to a particular location within the region (e.g. differences in the availability of the workforce between Hull and Leeds). The skills gaps reported by the interviewees were similar to those identified in the screen industries workforce nationally. However, the interviewees specifically noted two types of skills gaps. First, they argued for skills gaps in intrapersonal/communication and teamwork skills among workers at different stages of their careers. Second, they identified gaps in the workers' knowledge about the practicalities of the production process, organisational process and business development (e.g. organising production, cash flow, self-branding). Overall, the interview data reveal the importance of understanding skills shortages and gaps not only by identifying positions that are particularly difficult to

recruit but also understanding them within a specific socio-economic context of the Yorkshire-based screen industries.

Solutions and training provisions: The interviewees' suggestions about possible solutions to the identified skills mismatches in the region ranged from providing reliable resources about available occupational positions and career pathways to people who would like to launch their careers in the screen industries, sharing practical knowledge about production processes and developing their own businesses to implementing training opportunities for specific occupations (e.g. directors, writers in the film and television industry). The interviewees also argued that the level of expertise offered by given training provisions is an important aspect of successfully developing workforce skills. The majority of the training provisions for the mid- and senior-level workforce are based in London; thus, some of the interviewees argued that they would like to see more training dedicated to supporting the skills development of workers in the mid-to-senior stage of their career.

4.5 Crisis

Crisis and the region: The interviewees mentioned the challenges and opportunities associated with the disruption caused by the COVID-19 pandemic, technological changes and the UK's withdrawal from the European Union. They argued that the restrictions imposed by the COVID-19 pandemic have had an impact on the organisation of training and production in the screen industries. The interviewees noted that some forms of practical training (e.g. access to placements) will be limited or entirely suspended, which will impact the skills development of new entrants in the television and film industries. Furthermore, the interviewees drew attention to the increasing needs for new positions, such as COVID-19 assistants, in television and film production. However, they also addressed the opportunities provided by the current situation in terms of greater accessibility to workshops and meetings (often conducted online) and the possibility of working from home (WFH). The possible impact of Brexit and changes in the immigration rules were less often discussed by the interviewees in this study; these issues were more frequently mentioned in the reports about skills shortages in specific screen industries or nationwide (e.g. Animation UK, 2018; TIGA, 2015; Bakhshi and Spilsbury, 2019).

4.6 Skills shortages

According to the data provided by ScreenSkills (2019), 41% of employers from screen industries in Yorkshire and the Humber experienced recruitment difficulties in the last

12 months[30]. The survey also posed the question, 'Which of the nations/regions recruitment difficulties are the most noticeable?' with Scotland (21%), London (16%) and South East (11%) mentioned as regions with the most visible recruitment difficulties (ScreenSkills, 2019). Yorkshire and the Humber was mentioned by 6% of respondents as a place with noticeable recruitment difficulties (ScreenSkills, 2019). Bakhshi and Spilsbury (2019), in their review of skills issues and migration in the creative industries, reported that 'skills issues were most common amongst establishments in Yorkshire and the Humber (66%)'. Despite the different methodological and conceptual approaches presented in these reports, the concern with skills shortages in Yorkshire and the Humber was consistently emphasised in reports covering nationwide challenges with skills mismatches.

Interviewees in this study also mentioned problems with skills shortages in the region. However, when mentioning the skills shortages, it is worth understanding that some of them will not be bound to a specific region but will refer to skills shortages that are also observable on the national level or in the context of other regions outside of London and South East of England. For example, this case involved interviewees discussing the skills shortages of production accountants in film and television industries[31]. Figure 4.2a presents the skills shortages most frequently mentioned by interviewees in the film, television and videogame industries.

Film	Television	Videogames
Assistant Directors	Camera operators (self-shooting)	C++ programmer
Construction	Film editors	Concept artist
Editors	Production accountants	Senior producer
Gaffers	Production coordinators	Senior programmer
Line producers	Production managers	
Producers	Production secretaries	
Production coordinators		
Production managers		
Script editors		
Sound		
Sparks		

Table 4.2a summary of skills shortages discussed by the interviewees September-November, 2020

[30] Data collected in 2018 (ScreenSkills Employer Survey, 2019).

[31] Problem of skills shortages and production accountants were mentioned both by interviewees based in Yorkshire (regional level) and during the interview with the British Film Commission (national level).

4.6.1 Talking about skills shortages in Yorkshire and the Humber

Interviewees drew attention to the fact that skills shortages need to be recognised not only in the context of Yorkshire and the Humber but also in specific areas and places within the region.

> "It's quite different in the different areas. Skills gaps in Leeds are going to be very different than skills gaps in Hull and the Sheffield skills gaps. […] Because this is very grassroots stuff—I've seen how much it's changed over the last few years, but it's still not at a point where I could bring a production here and crew it up entirely from Hull. I couldn't even half crew it from Hull. That would be huge, and that's on a short film."
>
> (Lucy Meer, film producer)

Overall, interviewees argued that what would be understood as skills shortage for a film production company in Sheffield or Hull might not be recognised as such in other areas (such as Leeds). A similar need for different perspectives to analysing skills shortages was mentioned by Rob Speranza (film producer, South Yorkshire Film Network). He mentioned difficulties in finding people specialised in the film production department in Sheffield.

> "Production managers and line producers, not many of us either who properly do it on a regular basis; you always seem to have the same few people that work on the same films if they're being made around here. So there are not too many production managers, not too many line producers that are really, you know, properly Yorkshire based. […] It's the production aspect, the people that are the office production coordinators, you know, people like that, there's not a lot of us running around Yorkshire. I think there's a few more in Leeds but hardly any in Sheffield, York has got a few. But again, not many in places like Bradford."
>
> (Rob Speranza, film producer, South Yorkshire Filmmakers Network)

These differences in approaches to skills shortages in different regions were also discussed in attempts to assess the availability of different types of professionals in the region. For example, in terms of film production, Rob Speranza and Lucy Meer have different experiences in finding crew members for their productions.

> "Camera, sound, lighting, there's a fair amount, it feels like we're usually pretty good with that, especially with all the university programmes coming up. […] Tech people, basically editors, there's a lot more of those people, especially people in animation and graphics."

(Rob Speranza, film producer, South Yorkshire Filmmakers Network)

> "Finding sound is really hard, and people with the right production design experience. And I think probably just because there's not a lot of sort of, like, you know, design houses in the area that you can run props for. I think it is kind of a quarter of the things I kind of struggle to find really. And things like gaffers or sparks are quite difficult to find. I think a lot of the unglamorous jobs, accountants, someone who to do the numbers, are really, really hard to find as well."
>
> (Lucy Meer, film producer)

In the context of unscripted television production, professionals who work behind the camera were most often cited as difficult to recruit in Yorkshire. These occupations included production coordinators, production secretaries, production managers and production accountants. These occupations encompass the more logistical and organisational aspects of television production:

> "People working behind the scenes. They don't want to go on shoots, but just want to do risk assessments on the call sheets and do all the paperwork. And there are so many gaps. All you have to do is look at Twitter and Facebook to see all the gaps for secretaries and coordinators, really interesting, challenging problem-solving jobs where you're absolutely a part of the creative team, but you're not the director on set."
>
> (Glyn Middleton, Head of Skills, Screen Yorkshire)

Apart from the workforce to support and manage the production process, the interviewees also pointed out specific occupations—sometimes niche ones—that are difficult to find in the region, such as self-shooting camera operators (unscripted TV), which refers to more niche and specific types of occupations and skills, including the ability to capture unfolding action live. Another type of skills shortage was noted amongst casting researchers in unscripted TV. In the context of scripted TV (high end), interviewees refer to the lack of script editors not only in the region but also on the national level.

In the context of videogame companies based in Yorkshire, according to Jamie Sefton (Game Republic) companies struggle with finding C++ programmers, concept artists as well as more experienced producers and programmers. However, he argued that the possibility of remote work may encourage people from other regions to work with companies in Yorkshire without the need to relocate.

> "I think there's some stuff that you're not going to be able to solve, for example, a lot like Sumo. They need more experienced people in Sumo, like quite a few experienced producer roles or, you know, programmer roles, where the person that they need is perhaps older or maybe settled in a different area of the UK. They're not willing to move their family up to Yorkshire, to Sheffield or wherever to do that job. I think what's going to be interesting is if, due to the situation where a lot more people are working from home, whether that will open up more possibilities for people."
>
> (Jamie Sefton, managing director, Game Republic)

4.6.2 Understanding skills shortages within the context of Yorkshire and the Humber screen productions

Skills shortages in Yorkshire also need to be considered within the structure, density of companies and reach of production offered in the region. Interviewees who were engaged in television and film production drew attention to the diversity of skills and flexibility needed to maintain and find employment in Yorkshire. They argued that in regions and places with a higher density of screen industries companies and higher levels of production (London and South East of England), there is the possibility to be employed in very specific and niche productions with more defined types of skillset. However, in Yorkshire, there is a demand for and expectations of having different skillsets related to the types of jobs and productions offered in the region.

> "The other thing to bear in mind is that all productions in Yorkshire, all the production companies have to be quite versatile. You'll be working on current affairs one week and on a documentary the next week. […] You might not be the most brilliant investigator as a researcher, but if you're flexible and versatile, it makes you more adaptive. What's best for a Yorkshire production company isn't necessarily what would be best for London."
>
> (Glyn Middleton, Head of Skills, Screen Yorkshire)

Therefore, there is an important difference in recognising the needs for specific skillsets development in the region in terms of the different expectations of career development and job availability (both from workers' and employers' sites). The requirement of 'versatility' and 'flexibility' of skills is common amongst small screen industries productions, which should also think about their financial sustainability in pursuit of their creative productions. Smaller screen industries productions[32] tend to

[32] Smaller screen industries productions (i.e. productions known as small/ micro companies/ independent productions) from different sectors, including television, film or videogames, tend to supplement their income through engagement in different types of productions, such as outsourcing

engage in supporting other industries, both screen and—as understood broadly—digital media/creative industries (Keogh, 2019). However, this requirement of flexibility also has an impact on working conditions, the further casualisation of employment in the screen industries and workers' mental health and well-being.

For example, second jobbing is not uncommon in the screen industries (Gill, 2011:9), and interviewees also highlighted that workers in the region often need to engage in various types of jobs related to screen industries production (or not) in order to sustain themselves financially. Interviewees refer to practices of second jobbing and working on different types of media productions, such as supporting the advertising industry or other digital media industries. This approach also reflects the challenging working conditions in the screen industries and the variety of adaptive strategies required to maintain and develop further careers in the screen industries. While not everyone engaged in the screen media productions in the region supplements their income through second jobbing, interviewees argued that the requirements of adaptivity and flexibility are more visible in the context of workers and companies based outside of London and South East of England.

> "It's just harder to conduct business outside of London; to get to meetings, to network. It's just about access to the industry, and obviously production as well. The issue is that film production isn't financially viable at this stage. Nearly every producer in the North has a second job, usually like teaching. […] They all have to make commercials as well as doing creative producing, otherwise this is not sustainable."
>
> (Roxy McKenna, BFI Network Talent Executive, Film Hub North)

Interviewees discussed their struggles with skills shortages in the region but also admitted that their recruitment often relies on established networks and working with professionals from their private and professional circles. The reliance on informal networks is not surprising for the screen industries, but this practice also raises questions about who can access these networks and about the opportunities for people from diverse backgrounds to find suitable jobs in Yorkshire and the Humber. Lucy Meer (film producer) argued that she saw increasing efforts from film production companies in Yorkshire to recruit people from outside their own networks, but structural issues, and particular constraints from higher up the production hierarchy,

work (Keogh, 2019). The acknowledgment of these complex connections amongst different screen industries companies and broader creative industries is important in recognising the variety and scope of skills needed to maintain financially viable screen industries productions. Furthermore, it demonstrates the porosity of boundaries amongst different types of industries. As the majority of companies in the screen industries are small and micro companies, this model of production should likewise be considered as dominant rather than as a fringe activity.

limit what can be achieved. Lucy admitted that the speed of the production process and the pressures of crewing up production fast often leads to choosing 'the easy option'.

4.7 Skills gaps

According to data provided by ScreenSkills (2019a), skills gaps are less often reported by employers in Yorkshire and the Humber (38%). In many ways, reporting on skills gaps is more difficult than reporting on skills shortages. As demonstrated in the previous sections of this report, skills gaps tend to be reported in different ways and encompass a variety of abilities or personal characteristics. For example, reports define skills gaps in terms of lack of abilities in using specific software or technology but also in terms of lack of communication skills or team-work abilities (e.g. ScreenSkills, 2019a; Creative Industries Policy and Evidence Centre, 2019). The problem of recognising different types of skills gaps was also mentioned by Caroline Cooper Charles:

> "I think in the post-production field, because it is about familiarity and ability to use certain technologies, those skill gaps become evident very quickly, and people recognise them in themselves. Because if somebody says, 'Have you ever used …?' […] There's a very simple answer to that question 'yes' or 'no', and if somebody says, 'I need somebody for this job who has used Adobe After Effects 3.1', then that skills gap is really quickly evident. I think where it becomes more difficult is where you're reliant on people recognising their skills gap in themselves […]. 'But actually, I think I'm quite good at pitching', but maybe I'm not really because why would I be? Because I don't actually have any training in that area. Your career can advance very far without actually having had any kind of formal training or any formal assessment of how good you are at things."
>
> (Caroline Cooper Charles, Head of Creative, Screen Yorkshire)

As presented in the first two sections of this report, interviewees also refer to different forms of skills gaps, which could range from general skills to interpersonal and leadership skills to production-specific practical skills gaps. I divided the reported skills gaps into three categories: 1) general skills—interpersonal skills, communications skills; 2) management skills; and 3) production-specific skills. The analysis of the interviews revealed the three areas of the screen industries discussed (film, television and videogames industries) in Yorkshire and the Humber reported similar skills gaps. The skills gaps identified by the interviewees are presented in Table 4.3a.

General skills	Management & Organisational Skills	Production Specific
Interpersonal skills Etiquette of production process Teamwork Presentational skills Communication skills	Personnel management training (HR related training, responsibility for other team members – mid to high senior level management) Logistics of production – management and organisation of production process	Business development knowledge Pitching and self-branding Knowledge about production process

(Table 4.3a skill gaps identified by interviewees)

4.7.1 General skills

Interviewees drew attention to the importance of communication skills—known and referred to in other reports as interpersonal, communication, so-called 'soft' or general skills. General skills can be understood as 'a form of a universal foundation for success in the labour market, transcended the individual subjects and […] applicable across a wide range of situations (Grugulis et al. 2003:8). However, what is understood as generic skills can vary considerably among different places, industries and occupations. From the perspective of a conceptual framework, there is also discussion of how generic skills and the concept of 'emotional labour' are intertwined.[33] Furthermore, some scholars report that generic skills are not skills at all, but a description of the personal attributes desired in the workforce (see Hurrell, et al., 2012). The recruitment of workers based on their personal attributes, which are subjective and depend on the employer's preferences can lead to favouring candidates based on homophily principles. Consequently, contributing to persistence of inequalities and discrimination in the screen industries.

This problem was also explored by the interviewees, who described the importance of addressing skills gaps associated with communication, teamwork or interpersonal skills. These skills gaps were identified by workers in the screen industries on every level, from new entrants to senior management, as well as across a variety of occupations. Interviewees also drew attention to how the competitive, fast-paced and stressful nature of jobs in the screen industries results in issues around teamwork;

[33] The concept of emotional labour was developed by Arlie Hochschild (1983:7) to designate labour which requires workers 'to induce or suppress feeling in order to sustain the outward countenance that produces the proper state of mind in others'. Emotional labour has been widely researched in customer service and health care jobs. The example of analysis of emotional labour required to work in the television industry was presented by Hesmondhalgh and Baker (2008).

care for colleagues; or broadly defined abilities in collaboration with others inside and outside a given organisation. Therefore, to think about generic skills is to take into account organisation of work, work practices and work cultures in the screen industries. Interviewees argued that from their experience, skills gaps in generic interpersonal skills were more important among the workforce in Yorkshire and the Humber than were technical skills:

> "They [employers] want people who are great with people, who are great collaborators, great communicators who go the extra mile, nothing about any technical skills, nothing about any research skills. It's all about personality to be employed on all of those first, then if 10 people have those qualities, then they would look at their technical skills."
>
> (Glyn Middleton, Head of Skills, Screen Yorkshire)

Interviewees discussed the importance of interpersonal skills for new entrants to the industry and also in the context of how work is organised in the screen industries. Specifically, proficiency in communication skills and teamwork was also associated with building's one professional reputation, which translates to a greater possibility of securing employment and a higher income. These general skills are also important in other industries and occupations, but due to the project-based and competitive nature of the screen industries, interviewees often refer to the importance of 'networks', 'reputation' and 'self-branding'.

> "You can be the greatest spark on set, the greatest credit, but if you don't have the softer skills, it can be really tricky. If you've got a good reputation, you communicate on time, you are willing to support your colleagues: that kind of stuff. […] Then you have more experience, more work and more money: all that kind of stuff; better networks."
>
> (Jonny Lyons, development manager,
> National Film and Television School Leeds)

However, further discussions about general skills referring to more personal attributes or requirements specific for screen industries can be limited to certain demographics or can lead to assumptions about certain types of people. To understand generic or 'soft' skills in the context of how work is organised and access in the screen industries, one should consider factors such as building one's reputation, flexibility and willingness to prove oneself. These necessary qualities also draw attention to problems with diversity, inclusion and equality in accessing job opportunities in the screen industries.

4.7.2 Management and leadership skills

Interviewees also identified skills gaps among mid- and senior-management staff members in the screen industries in managing other people's work. The problem of good management practices arises from a combination of inadequacies in interpersonal and communication skills as well as awareness of the different types of forms and techniques in managing personnel. The reason for this management skill gap identified among people advancing in the industry (i.e., film industry) is the lack of any type of training or support in developing skills in managing personnel.

> "People will get promoted or they advance their careers based on the scale of the production that they'd last worked on, what the budget level was, et cetera. So, you start as a runner, and then production assistant, assistant production manager, production manager, line producer, and then you get into a role like line producer and actually, you are responsible for managing lots of people. […] And those people don't have any HR training, [...] it's on-the-job training, and their training relates to the actual role that they're performing. But then, I think this applies to all the kind of heads-of-department roles—people don't get management training as such. They don't get any training on how to manage your team."
>
> (Caroline Cooper Charles, Head of Creative, Screen Yorkshire)

> "I would love to see more leadership and management skills that are utilizing things from other industries. […] And I think leadership especially, I think there's a lot of instances, especially in the film industry of very poor... Just in terms of it's a very highly pressurized, stressful environment being on a production and a lot of people who are, maybe, inexperienced at what they're doing, or they're doing something for the first time. And I've seen it in the past and I've heard horror stories from other people that you think well, if they just knew how to manage people that could have been a better situation all around for everybody."
>
> (Lucy Meer, film producer)

The management skills gaps were also acknowledged during the interview with the British Film Commission, suggesting that these skills gaps are also observable outside of the region. Furthermore, Charlie Ball argued that skills gaps in management are problems in other industries in the UK as well, including the tech industry.

> "The last Employer Skills Survey (ESS) found that over half of applicants for managerial positions couldn't display any managerial skills whatsoever. […] The problem is that some of these people will have actually got those jobs. And

> that is because it's what we do in this country, we don't have separate management training tracks."
>
> (Charlie Ball, Head of Higher Education Intelligence at Graduate Prospects)

The problem of developing management skills indicates the extension of thinking about interpersonal, communication and leadership skills to workers at different stages of their careers. Supporting the development of management and leadership skills is also beneficial for Yorkshire and the Humber, not only in preparing workers to organise their production in a better manner, but also in terms of supporting good working conditions in the region. The interviewees' discussion about gaps in management and leadership also indicates limits of acquiring tacit knowledge, as interviewees argued that management skills are neglected during the planning of the production process and recruitment for leadership positions. Furthermore, interviewees argued that management skills are not necessarily possible to acquire on the job, and the lack of such skills has an impact on the production process and working conditions. Interestingly, as in the example of Lucy Meer (film producer) mentioned above, development of management and leadership trainings in the screen industries can draw on examples of such trainings available in other industries.

4.7.3 Developing your own business

The knowledge and skills required to establish their own company or work effectively as freelancers was also identified as a skills gap by interviewees. This gap was identified by interviewees representing different screen industries, including film, television and videogames. However, as mentioned in section 4.2.2, the organisation and scope of the screen industry production in Yorkshire have an impact on how to approach the question of skills that support the development of own businesses in the sector. For example, Caroline Cooper Charles pointed out a high proportion of screen industries workers in Yorkshire are over 50 which poses problems for replacing generations of creative workers and companies in the region.

Lack of adequate knowledge and skills about 'developing your own business' encompasses a broader category of skills gaps and includes knowledge about financial, management and market aspects of establishing and maintaining a sustainable business. This skills gap can include basic knowledge about how to start a company for new entrants to the screen industries who would like to launch their own businesses. For example, Jamie Sefton identified the need to support creative workers who would like to establish their own game studios. This support could entail

sharing practical knowledge about day-to-day operations of micro or small game studios.

> "A games company, where do you start? Which platforms do you go to and all that kind of stuff? Where should I be selling my game? You know, it's that these training side of things where you can go in a bit deeper is where we're lacking."
>
> (Jamie Sefton, managing director, Game Republic)

In terms of addressing these skill gaps, one solution was to provide sessions with mentors, understood in this context as more experienced company owners (or 'veterans' in the industry) in the region, to share their experiences and practical solutions. This approach is important in de-mystifying the daily operations of the company, organising production and providing information about possible networking sites and sources of support. The importance of approaching work in screen industries as a form of business was also expressed by Lucy Meer:

> "I think one of the things that was really eye opening for me, and I recently did another Creative England program called Market Trader[34], which I thought was really valuable because it just purely looked at the business and market aspects of projects. Whereas I think, in the industry, a lot people don't often talk about specifically; about what is a good and a bad sales deal? What are the tips and tricks of how to get people's attention at festivals?"
>
> (Lucy Meer, film producer)

Approaching screen industries as a business was an important point raised by all interviewees who acknowledged that not only the creative side of the production, but the practicalities of production matter as well. This theme was also evident in addressing the need for further training as well as skill gaps. The focus on learning from 'veterans' from the industry or 'mentors' was also seen as crucial in gaining access to knowledge about screen industries accumulated through others' successes and failures. However, establishing adequate mentoring support presents several challenges. First, it raises questions about the availability of mentors in the region—there is a greater availability of mentors/industry veterans in London and Southeast of England. Second, some interviewees argue that they often serve as mentors for others, whereas they also need to be mentored; but they acknowledged having access to the support from more experienced creative workers in the region. Thus, there is a need to provide mentors for workers at different stages of their careers. This need is also reflected in the limits set by local or regional professional networks or

[34] Creative England – Market Trader programme.

communities, which are not always equipped to provide an adequate level of support for creative workers (see Grugulis and Stoyanova, 2009). Third, mentoring support should not only be provided for the development of new companies in the region, but also for already established companies, as Caroline Cooper Charles mentioned:

> "A lot of the production that goes on out of Yorkshire is kind of relatively low budget. Read: relatively high volume. The types of material that are being developed are at a certain level. And the people who are developing and producing that material are at a certain level, and therefore, they don't have a skill gap in terms of what they're delivering at the moment. But if they wanted to grow or advance their company, there is a skill gap there, because actually, they don't have the experience and track record of delivering perhaps higher budget shows, more high-profile shows. It's not necessarily a skills gap in terms of what they're currently doing but in terms of growing the industry."
>
> (Caroline Cooper Charles, Head of Creative, Screen Yorkshire)

'Developing own businesses' was also mentioned in relation to micro-companies or developing freelancers' presence—in pitching ideas, self-presentation or self-branding. Interviewees drew attention to the importance of 'pitching' and presentational skills among screen industry workers. Interviewees from three screen industries identified this skill gap among workers based in Yorkshire. Jonny Lyons, who was engaged in developing training on pitching and presentational skills for individual workers and companies, mentioned that these types of training are highly popular. Furthermore, Roxy McKenna drew attention to the importance of developing further sessions for creative workers who would like to gain more confidence in 'branding' their work.

> "If you're a freelancer and you've got an idea and you want to pitch it, if you're a freelance filmmaker, of which there are many, you need to get a foot in the door. […] What are the commissioners looking for? What makes a good sizzle reel? How do you network? I think there should be an opportunity to develop that [type of training]."
>
> (Jonny Lyons, development manager,
> National Film and Television School Leeds)

> "And one area we have never done, which we probably should, would be sessions like **branding and marketing yourself** as a creative. I'm talking now not about crew but about writers, directors and producers so much of it is about branding who you are to industry and to agents [...] Things like this can all kind of help network you and profile you, and we haven't done a session on that and I don't see them often."

(Roxy McKenna, BFI network Talent Executive, Film Hub North)

The importance of 'pitching', 'self-branding' and presentational skills is reflected in the organisational structure of the screen industries and its competitive nature (see Gill, 2011). Specific attention was also placed on work done by the freelancers in the screen industries, and that they are also required to have this type of training because of their form of employment.

4.7.4 Logistics of production

> "Logistics of production is another thing. I think sometimes that there's a lot of crew that don't necessarily think about where they're going, the budget of the film; can production feasibly cover a hotel room or petrol?"
>
> (Rob Speranza, film producer,
> South Yorkshire Filmmakers Network)

The other skill gap identified by the interviewees working in film production was in understanding the logistics of production by existing and prospective workers. By 'the logistics of production', interviewees understood knowledge about practicalities or organising and managing film or game production. In contrast to previously discussed skills gaps in 'development of one's own business', 'logistics of production' skills focused mostly on acquisition of tacit knowledge through gaining on-the-job experience (see section Modes of Training, p.22). This skill could only be acquired through previous training and observation on the set and referred mostly to practical knowledge about the organisation of production. These skill gaps emphasise the importance of practical experience on the set for new entrants and people who would like break into the industry, which does not necessarily lead to film production, but rather, organisational work (e.g. organising accommodation or food for crew members) behind the film production. The information about logistics of the production process was mostly mentioned in the context of film and television production and applies to different grades of workers. For example, new entrants need knowledge about the production processes, which they could not learn during their degrees or through more informal means, and more experienced workers should gain access to new knowledge and practices.

> "I certainly did get access to it from being a producer, but it was just, it's all of those elements, at least for producing and filmmaking, you can't really find out on the internet. […] I think what was quite important for me, as well is understanding how to practically develop a project rather than instinctually."
>
> (Lucy Meer, film producer)

4.8 Training Provisions

The interviewees identified a need for training for companies and creative workers based in Yorkshire and the Humber. The proposed training provisions aimed to address skills mismatches discussed by the interviewees, such as knowledge about the practicalities of the production process, the lack of proper management and leadership skills, or diversification of skills in terms of establishing one's own company. Interviewees from all three screen industries discussed the need to provide reliable information about occupational positions, career choices and opportunities, and support in gaining knowledge and skills relevant to operating one's own company, as well as to pay greater attention to management and leadership training (see section 4.3.2). These suggestions for the improvement of skills and knowledge development in the screen industries are similar to those identified in previously published reports about skills mismatches (see Creative Industries Policy and Evidence Centre, 2019).

There were several identified gaps in the training provisions in Yorkshire and the Humber, and the interviewees proposed different solutions to address skills mismatches. These included developing dedicated resources for screen industries (e.g. information on occupational positions), increasing collaboration between screen industries and regional higher education institutions, or raising awareness about certain problems within screen industries, such as mental health, equality, diversity and inclusion (see Table 4.4.a). Interviewees acknowledged that most specialised training provisions for creative workers (at different levels of their careers) were based in London.

Furthermore, the interviewees also pointed out that offering specific training provisions in Yorkshire and the Humber might be challenging due to possible limited interest and difficulty in identifying possible attendees. This draws attention to not only the training that is needed in the region but also the feasibility of organising specific training provisions, for example, in terms of attracting an adequate number of attendees.

Possible areas requiring support	Delivery
Reliable and accessible information about occupational positions, career development and opportunities	• Suggested collaboration in preparing the resources between universities and industry representatives • Workshops • Mentoring
Practicalities of production process	• Preparation of accessible resources

	• Mentoring • Networking • Peer-to-Peer support • On-the-job training
Equality, Diversity and Inclusion Initiatives	• Supporting workers from diverse backgrounds in developing careers in the screen industries (beyond entry level applicants) (e.g. mentoring) • Unconscious bias training (e.g. mid to senior level management, HR departments)
Developing one's self-brand and reputation	• Networking • Pitching ideas • Self-branding (e.g. visibility online)
Establishing and developing one's company	• Mentoring • Networking • Peer-to-Peer support (collaborations with representatives of other screen industries)
Management and leadership training	• Management and Leadership Training (including – examples from other industries) • Mentoring – especially for underrepresented groups of workers
Training for specific occupations	• Occupations mentioned: producers, writers, director and distribution roles (advanced training available only in London)

Table 4.4.a Training needs and support identified by the interviewees

4.8.1 Information about occupational positions, career opportunities and career choices

Preparation of information about occupational positions and career opportunities in the screen industries has been mentioned in other published reports about the screen industries (e.g. BFI, 2017:P). Despite the availability of some resources about occupational roles (see ScreenSkills, 2020; Royal Television Society, 2020) and career advice (see, for example, online webinars), the interviewees argued that there was a need to provide more reliable and comprehensive information about career choices and development in the screen industries. The interviewees demonstrated that the constant and rapid development of the screen industries, different forms of work organisation and the use of different occupational title conventions could be confusing for those who would like to launch their careers in the screen industries. For instance, Jamie Sefton noted that providing more clarity and advice on different job roles available in the videogame industry (not only in development roles) would allow people to make better decisions about their career plans and development.

> "I've been in the industry for years, but I need to know as well what the differences are between the different roles, so maybe we need to educate around. This is what a producer does. This is what a programmer actually do every day, what does a lead programmer do? What's the difference between a lead programmer and someone who just comes in to do a graduate entry level programming?"
>
> (Jamie Sefton, managing director, Game Republic)

Developing comprehensive and reliable resources about job roles and career opportunities in the screen industries was mentioned as the first step to assure new entrants and those looking to change careers. Parents and educators know how to direct people to reliable resources. However, the development of such resources, especially ones that would also cover the cross-commonality between roles in different screen industries, is a difficult task. Furthermore, sometimes companies and production companies use different occupational title conventions (e.g. this is often the case in the videogame industry), and similar occupational roles may require different skills, responsibilities and knowledge, depending on company size, location and (un)established work hierarchies.

The next step discussed by the interviewees was about putting more emphasis on establishing workshops or training about routes to the industry. This concern echoes the problems emphasised by ScreenSkills (2019) report on confusion over what was expected of new entrants to the industry and what they should expect when entering the industry. In other words, training should focus on preparing people for what they

should expect in working in the screen industries. The interviewees argued that this was often not provided by university education, yet it is also inevitably missing from the industry side.

> "It's sort of developing people's understanding of routes to industry. That's an essential bit of training."
>
> (Roxy McKenna, BFI Network talent executive, Film Hub North)

The interviewees mentioned that the breadth of available professions in the screen industries is often inadequately presented, especially for roles that could be defined as less known, less 'glamourous' or 'non-creative'.

> "People just don't know the breadth of jobs that are in this industry that are legitimate jobs. You could be working year-round, making some good money on them. People just don't know that these jobs even exist. They think that you're either Christopher Nolan or you don't work in films."
>
> (Lucy Meer, film producer)

The preparation of such information, resources and campaigns could provide reliable resources to be used by new entrants to the screen industries but also those who plan to change careers or who may potentially support the screen industries' development (e.g. via accounting, make-up artists or construction). The preparation of such resources was seen as a possible way to address some skills shortages by bringing people into the industry. One example of a skills shortage that was often associated with a lack of awareness about the possibility of working in the film or television industries was 'accounting'. However, the attraction of people to the screen industry from other occupational areas also needs to be positioned within the broader perspectives of the working conditions in the screen industries and associations with screen industries. Indeed, we must recognise that unstable and sometimes more lowly remunerated work in the screen industries is not attractive for those who chose stability over working in the screen industries.

4.8.2 Practicalities of the production process

Unsurprisingly, as in the case of other studies about skills development, the interviewees argued that an on-the-job or 'pragmatic', 'practical' look at the production process was an important part of all training. They argued for greater attention and training, preparing workers for the practicalities of supporting and organising the production process. This practical information was associated not only with supporting new entrants but also with allowing creative workers in mid-level careers to learn about

the organisation of the production process. Such knowledge is generally acquired tacitly by being on the set and 'learning by doing'; nonetheless, the interviewees pointed out that workshops or other resources could help people to get a glance at what they should expect on the set. The practicalities of the production process were discussed primarily in the context of the film and television industries, with future videogame production training being more associated with the development of one's own company or mentoring.

> "It's even just a practical and pragmatic look at how the industry works, how a film comes together. I've always found it really useful to do production workshops [...] All of those little nitty-gritty things that lead to things about, and what to consider when you are breaking down and putting your schedule together? What to consider when you're on location, a checklist of all the things you need to make sure that your film happens."
>
> (Lucy Meer, film producer)

> "I think that's something that could be really useful for training schemes and universities - human relations. You know, it is about the etiquette, proper professional behaviour, but realising that, you're talking to people. It's not just a location, it's not just the homeowner, it's not just a thing that you tick on a piece of paper."
>
> (Rob Speranza, film producer,
> South Yorkshire Filmmakers Network)

The interviewees also mentioned that part of practical training was knowledge about how to deal with the working conditions associated with the screen industries and their impact on people's wellbeing. This approach is often discussed in other reports, sometimes mentioned as 'resilience' (see ScreenSkills, 2019a). However, the current interviewees' definitions of 'resilience' did not include discourses about personal perseverance and flexibility (see Bull and Allen, 2018; Gill and Orgad, 2018), but instead acknowledged the need to care for one's mental health and to de-mystify the development process (e.g. dealing with the high levels of insecurity and failure of start-up productions). These discussions also addressed inequalities in the screen industries, such as socio-economic disparities:

> "I think that kind of resilience of knowing how to reach out to people and ask for help. […] It's an industry where there is a lot of pressure that you need to be doing something now. Everybody else is doing great stuff, and you need to do it. […] Yeah, like take a step back and if I don't make something this year, I will go get a job and I will pay my rent. I'm going to be a lot happier because my own survival has to come first. And I think at least culturally, in the British

> industries, we don't talk about alternative jobs. We don't talk about how we get by; we very rarely talk about the fact that so many people get by on large saving pots, inheritances."
>
> (Lucy Meer, film producer)

Therefore, discussions about the 'practicalities of the production process' referred to skills gaps (see sections 4.3.1 and 4.3.4) identified in the workforce in the region regarding, for instance, knowledge about etiquette on set, communication skills or organisational knowledge about the production process. The interviewees discussed here the importance not only of acquiring such knowledge on the job but also the possibility of introducing training schemes that would address these skills gaps for new entrants. Lucy Meer's quote about resilience and the need to offer support for the 'practicalities' of production beyond organisational issues also remarks upon high levels of pressure, stress and mental health problems in the industry.

4.8.3 Equality, diversity and inclusion initiatives

The interviewees recognised problems with equality, diversity and inclusion in the screen industries in Yorkshire and the Humber. They also acknowledged problems with diversity and inclusion in the context of Yorkshire, drawing attention to the need to support career advancement among workers from diverse backgrounds. This problem was mentioned by Charlotte Michael (West Yorkshire Combined Authority), who argued that issues of diversity and inclusion focused mostly on new entrants, while further support was needed for career advancement to mid- and senior-level positions. This discussion echoed findings from reports and academic studies that have focused on persistent inequalities and discrimination in the screen industries (for an overview see SIGN Equality, Diversity and Inclusion Scoping report July 2020). This problem was also mentioned by Caroline Cooper Charles in reference to finding placements for participants of the Beyond Brontës scheme.

> "Any kind of training which is focused both on new entrants, but also on that kind of career advancement to people who are maybe mid-level, from Black and minority ethnic backgrounds. I mean, for instance, on the Beyond Brontes scheme (…) Part of the scheme was sending some of those new entrants out on placements with production companies. There is not one Black-led production company in Yorkshire where I could send those new entrants."
>
> (Caroline Cooper Charles, Head of Creative, Screen Yorkshire)

The problem of inequality and discrimination in the screen industries in Yorkshire and the Humber, specifically in the film and television industries, also has to do with the preference to use already established connections and networks for collaboration. The

interviewees admitted that there were companies and people in the region who cared about supporting career development among workers from diverse backgrounds in the industry. However, hiring people through established networks was still seen as the most convenient option (see section 4.8.2).

The other side of approaching support for EDI initiatives in the region concerned providing training and resources to HR personnel or senior management regarding the importance of EDI in the screen industries. The interviewees imagined such initiatives as, for example, unconscious bias training or more inclusive forms of recruitment process.

> "I think maybe there could be some training around diversity, about racial bias about how you put adverts out that attract people from different backgrounds. Because sometimes the way the adverts are worded and the way that they're structured, it attracts you know, white middle-aged blokes. (…) We want to be able to attract more diverse people into the industry."
>
> (Jamie Sefton, managing director, Game Republic)

4.8.4 Training for specific occupational roles

The interviewees also mentioned the possibility of providing training for specific occupations that were often considered to be suffering from skills shortages (see section 4.2) or skills gaps in, for instance, skills beyond the entry level (see section 4.3). These occupations were mostly mentioned in relation to the television and film industries and included producers, writers and directors, as well as distributional roles.[35]

> "Producers, writers and directors, I mean, there is very little opportunity for them. Once you get beyond university, once you get beyond higher education, essentially, your training and skill development stops. Other than the experience that you gain on production. I mean ScreenSkills used to, to support quite a lot of programs that were aimed at writers and directors and producers; they no longer do that."
>
> (Caroline Cooper Charles, Head of Creative, Screen Yorkshire)

Within these roles, Roxy McKenna drew attention to the importance of developing 'storytelling skills' in the television industry. These skills must also be paired with a

[35] They suggested training for jobs in distribution and sales in the television and film industries. These jobs were regarded as not heavily dependent on location. However, the interviewees argued that it was difficult to find any support to develop training for distribution roles outside of London.

broader set of skills, which requires knowledge about markets and audiences (see section 4.3.3). However, the acquisition of these types of skills can take substantial time and financial resources, which can prevent many developing talents from Yorkshire from advancing their careers:

> "I suppose that [storytelling] is really underdeveloped and didn't get any attention. And it's probably the most important. And ultimately, because we're in it for telling stories, and stories have to be as good as they possibly can be. But there is no script development, or story editing training that isn't incredibly expensive. […] I think there's a lack of training and support there in story development and development for and developing your story or idea for market and knowing your audience, too. I think there's a bit of a gap there. Especially for TV."
>
> (Roxy McKenna, BFI Network Talent Executive, Film Hub North)

The interviewees drew attention to the fact that most advanced training for these occupations was based in London. Furthermore, opportunities to develop the required skills on the job were scarce for these occupational positions because of the limited availability of production in the North, as Roxy McKenna argued:

> "I think there's people who get to a certain level here, but they're not quite the level that they need to be to actually break properly into the industry. They need to move to London in order to make the next step. What we're doing is trying to help bridge that gap. This is sort of experience gap, and you can't get experience because there isn't enough production in the North."
>
> (Roxy McKenna, BFI Network Talent Executive, Film Hub North)

A similar argument was made by Charlotte Michael (West Yorkshire Combined Authority), who, in reference to difficulties with identifying skills shortages and gaps in the region, argued that the feasibility of training provisions and career development at different stages and grades depended on the availability of jobs, productions and the necessary infrastructure.

4.9 Current challenges

Interviewees discussed the challenges that the Covid-19 pandemic has posed to the screen industries' capacities to identify skills mismatches and provide training. The most discussed subject concerned the pandemic's impacts on labour markets and skills development in the screen industries. The interviewees' opinions echoed

findings from other academic analyses of and commentaries on the current and future impacts of the pandemic restrictions on the industries (e.g. Banks, 2020; Comunian and England, 2020). In addition to challenges, interviewees also addressed the opportunities created by the crisis. The subject of Brexit was comparatively less discussed, though the forthcoming end of the transition period could couple with the pandemic and raise questions about new approaches to assessing skills shortages, recruitment processes and immigration rules.

4.9.1 The impact of Covid-19

Inevitably, the Covid-19 pandemic brought significant disruption to production in the screen industries and triggered the redefining of approaches to work, training, and networking. While each screen industry is dealing with pandemic restrictions differently, the precarity and uncertainty experienced by many creative workers have been exacerbated, thus prompting discussions about the future of the sector (e.g. Banks, 2020; Eikhof, 2020; Comunian and England, 2020). The pandemic's impacts on approaches to skills development and training are threats to inclusion and diversity in the sector. Job losses, limited access to professional networks and employment insecurity have different implications for different groups of creative workers (Eikhof, 2020). However, the pandemic's impacts on skills development and training in the sector have not been yet fully explored. Therefore, future studies could examine more closely how the pandemic has affected the skills development system in the screen industries by, for example, investigating the transition to online means of training or organising offline practical training in accordance with social distancing rules.

Interviewees discussed the challenges and opportunities associated with the ongoing pandemic and its impacts on the sector's approaches to skills development and training provisions. They drew attention to the fact that the introduction of restrictions and social distancing rules have implications for creating new jobs implications in the film and television industries, such as Covid-19 supervisors and assistants. This would effectively create new positions with raising a requirement to provide different support and a set of skills to the film and television industries. This situation's implication is also visible in an increasing number of resources (e.g. British Film Commission, 2020; Production Guild, 2020) and online training (ScreenSkills, 2020b) related to on-set safety during the pandemic.

The introduction of restrictions and social distancing rules on set has also resulted in a limited availability of placements and practical training. The importance of on-the-job training and acquiring tacit knowledge through learning by doing was emphasised in all the interviews. However, due to pandemic restrictions, some training has been postponed or moved online, limiting opportunities for new entrants to gain practical

experience. It is worth remembering that the pandemic is still developing, and restrictions and social distancing rules are constantly revised to allow for the continued television and film production. However, the limited possibility of undertaking practical training or networking in the screen industries is having a negative impact on creative workers' skills development and career progression. This situation was highlighted as particularly problematic for new entrants to the industry who do not have established positions or contacts in the sector.

> "You've got a whole year's worth of new entrants who normally would be finding their path into the industry by going on placement, by doing shadowing, or different kinds of internship. These are the methods by which people actually build their relationships, which means that they have a career…. (…) None of that is happening [now]. Covid is really going to hit young people, I think, in terms of jobs and employment availability"
>
> (Caroline Cooper Charles, Head of Creative, Screen Yorkshire).

There has also been growing concern about a possible exodus of creative workers from the screen industries as they search for different and often more stable careers. Charlie Ball argued that this is because people are trying to achieve a level of stability in a time of crisis: 'It's a recession, and every single time, people go for security. You see fewer people leaving work voluntarily. You see more retirement. You see people going for stable jobs…. So that's going to be the big challenge. That's going to be a big challenge for the industry.' However, Charlotte Michael (West Yorkshire Combined Authority) argued that she had not observed this trend in all parts of the sector, such as in independent television companies based in Yorkshire.

Some interviewees also drew attention to opportunities created by the increasing availability of online training, online networking and online business meetings. They argued that the pandemic made connecting and establishing certain relations easier, especially now that there is no requirement to travel to London. However, other interviewees presented a less optimistic view of this approach, arguing that there are difficulties in establishing rapport with people online and that the inclusivity of online networking meetings is illusory.

> "I think a lot of TV has obviously been in Leeds and Manchester, and, but at least for our features, all the people who make decisions are in London This pandemic has helped slightly getting in the door with them because you don't have to go to London to meet them."
>
> (Lucy Meer, film producer)

Interviewees also drew attention to further changes, such as increased possibilities of working remotely (i.e., working from home), which will redefine the requirement for creative workers to perform jobs in specific places. However, the possibility of remote work is also dependent on specific screen industries (e.g. it is easier to adapt in the context of videogame production than television production) or specific job roles (e.g. there are questions about what kind of tasks can be performed remotely). Interviewees indicated that remote work or flexible forms of work might become more popular after the pandemic and, as a result, redefine production networks and their approaches to recruiting workers.

Nonetheless, in certain occupations and parts of the screen industries, outsourcing, offshoring and remote work were already popular and widely used before the pandemic. Furthermore, one's ability to work remotely depends on a given country's labour regulations. Therefore, while working remotely might become more prevalent after the pandemic, in the context of the screen industries, which will experience redefined relations among specific occupations, workers and productions, relations are regulated by various economic, political and business decisions. In other words, the pandemic accelerated the transition to the work-from-home model, much as it did the use of new technologies and solutions in the production process.

Interviewees also drew attention to accelerated interest in the use of new technologies that will allow people to continue working despite the restrictions and social distancing rules. For example, regarding virtual production and the increased use of VFX, CGI, and livestreaming technology as well as efforts to engage audiences through social media platforms (e.g. YouTube, Tik Tok). Technological changes in the screen industries create further needs for constant learning and adaptability. Interviewees argued that this will also result in changing approaches to organising productions and the use of technology after the pandemic, thereby meeting increased demands for technical skills (e.g. CGI, VFX skills) and also developing knowledge of measuring and maintaining audience engagement (e.g. data analysts).

4.9.2 Implications of Brexit

Representatives of screen industries varied in their assessment of the impact of Brexit on skills shortages on their production, with the animation, VFX and videogame industries being the most concerned about the introduction of new immigration rules (Ukie, 2017; Animation UK, 2018; UK Screen Alliance, 2020). The concern about skills shortages was less visible in reports about television and film industries in the UK (e.g. ScreenSkills, 2020). According to an analysis conducted by Bakhshi and Spilsbury (2019:40) skills issues in creative businesses were particularly prominent among employers in Yorkshire and the Humber. However, most employers from the creative

business sector based in Yorkshire and the Humber (76%) and the Midlands (76%) claimed that they are 'not at all worried' that Brexit might cause skills shortages in their companies (Bakhshi and Spilsbury, 2019:41). The theme of Brexit was also not prominent in discussions with interviewees. However, it is possible that the subjects of skills shortages and immigration were not as concerning for the screen industries in Yorkshire because of the more pressing problems caused by the COVID-19 pandemic and/or the nature of the post-Brexit trade deals and immigration models.

However, the importance of considering the implications of Brexit and COVID-19 in understanding future skills shortages in the screen industries was mentioned during the interview with the British Film Commission:

> Once EU/EEA personnel have to be sponsored the same way non-European people [i.e. non-EU] currently have to be sponsored, I think that will be an interesting watershed moment where we find out where the true skill gaps are. Because up until this point, any indigenous skills gaps—there were skills gaps in the UK resident workforce—could've been, and can be, filled by EU/EEA talent. Now once EU/EEA talent has to be sponsored in order to work in the UK, it might be a game changer. So at that point, people are potentially going to be more inclined to use a UK worker when they would've through creative choice used an EEA or EU equivalent. We just don't really know because it's not really been measured. We are doing some analysis around workforce makeup because of Brexit and to ensure that the film industry and that the high-end TV industry are not negatively impacted and to make sure that our immigration rules are inclusive enough to allow us to operate in a relatively similar way to how we have done up till now. But we're not going to really know about an analysis of the skills gaps immediately, and especially because of COVID-19, which has turned everything upside down.
>
> (British Film Commission)

This quote draws attention to the importance of understanding skills shortages in the context of further immigration regulations and the socio-economic situation created by the COVID-19 pandemic. Therefore, as mentioned, defining skills shortages becomes increasingly difficult in addressing shortages as 'actual' or 'real' (e.g. occupations included in the SOL) or shortages created by 'creative choices'. The recognition of socioeconomic and political forces in shaping the labour market and employers' choices to hire workers from or outside the UK will also have an impact on how we understand and approach to skills shortages in the screen industries.

5. Conclusion

This report comprised a brief conceptualisation and investigation of skill mismatches, understood as skills gaps and shortages, in screen industries in the UK. This report demonstrated how the difficulties in defining the skills, ambiguities in the terminology used in reports, and methodological challenges that arise in measuring skill mismatches are reflected in the context of the screen industries at both the national and regional levels. This scoping report did not aim to provide a comprehensive account of skill mismatches in Yorkshire and the Humber. Instead, it aimed to synthesise information from published studies, reports, and interview data to identify current gaps in knowledge which require further attention—that is, the need to support the development of training and undertake further research projects about skills in the screen industries in Yorkshire and the Humber.

The understanding of and approaches to skills are not static; rather, they are dynamically understood through not only the context of the chosen theoretical framework but also the changing political and socio-economic contexts (Vallas, 1990; Cockburn, 1983; Grugulis et al. 2004; Hurrell et al. 2012). While discussions about skills development and training are ubiquitous in reports about jobs in a new economy, the meaning of skill in contemporary society is difficult to define. The 'common sense', neoliberal understanding of skills as simply 'worker's own abilities' does not provide information about the political and socioeconomic contexts in which certain tasks, abilities, or even attitudes become defined as skills. Approaches to job searches, skills development, and training in the screen industries are changing because of reorganisation of production and employment relations, including increasing casualisation of employment in the sector (e.g. Grugulis and Stoyanova, 2009). Consequently, creative workers need to seek development of different types of skills, such as communication, networking or entrepreneurial skills and search for different types of on- and off- the job training (e.g. investment in one's own training) (Gill, 2002/2013).

The skill sets that are desired by employers can vary based on the available infrastructure, as well as the scale and type of production in a given region. In this report, the interviewees discussed how the approaches and expectations regarding skills and training differ between the screen industries' productions in Yorkshire and London. Furthermore, the use of the term 'skill' is often not neutral but draws attention to the social valuation of certain abilities and competences over others in defining some occupations as 'high' or 'lower', 'essential' or 'non-essential', and 'above' or 'below' (see section 2.3). The use of this terminology has an impact on the popular imagination about jobs and skills as well as on policy development (Keep and Mayhew, 2010). For instance, the interviewees argued that new entrants to the screen industries

are often familiar with the ‘creative’ occupations within them but not with the organisational roles. Furthermore, defining occupations as ‘skilled’ or ‘unskilled’ is socially constructed in relation to not only specific work tasks but also used technology (e.g. gendered and racialised; Wajcman, 1991).

Different conceptualisations of skill have implications for understanding and measuring skill-related issues within the workforce, such as gaps and shortages. As previous reports about such issues in the creative and screen industries have indicated, measuring skill shortages and gaps in the sector presents many challenges with regard to providing adequate mapping of skill-related issues in the UK screen industries. These challenges range from occupational classification problems to the lack of sufficient data granularity in national statistical data sources. Consequently, this causes even greater problems in assessing skill-related issues at the regional level. This situation can be illustrated by the problems that researchers encounter when assessing skill-related issues in the UK videogame industry (see ScreenSkills, 2019; Creative Industries Policy and Evidence Centre, 2019; Mullen et al., 2019). From the perspective of measuring skill-related issues using not only quantitative but also qualitative datasets (e.g. interviews and focus groups), there is the question of how and by whom the skills shortages and gaps are being reported. While employers’ perspectives provide important insights into the problems with recruitment or companies approaches to training, employers’ issues need to be positioned within the broader context of work and production organisation in the screen industries. Therefore, we should recognise that skills shortages might be affected by the difficulties in providing adequate financial remuneration to workers, by the lack of desired infrastructure or production in specific locations, and/or by workers seeking greater security by finding jobs outside the screen industries (see Hurrell et al. 2012; Creative Industries Policy and Evidence Centre, 2019). Skills gaps are even more difficult to identify because they are often presented as balancing on the spectrum between broadly defined ‘technical skills’, ‘communication skills’, or ‘resilience’ (see Grugulis et al. 2004). This form of reporting skill-related issues raises questions regarding whether reported skills gaps are actually ‘skills’ or are personal attributes. Consequently, reporting skills mismatches need further critical investigation to understand how these approaches to identifying skills gaps have possible implications for the deepening inequalities among, discrimination against, and exclusion of workers from the screen industries.

It is important to consider these conceptual and methodological factors in discussing skill-related issues because they have a tangible effect on the shaping of policies, from the funding of and support for training in specific skills development to immigration policies (e.g. ‘skilled worker visa’ and shortage occupation list). Furthermore, the current socio-economic and political contexts in which discourses about skills

development and training in the policy context are shaped (e.g. discourses about reskilling, upskilling, or the importance of digital skills) are approached in certain cases as one of main solutions to various systemic problems (Keep and Mayhew, 2010). While the understanding and application of skills development initiatives and training in the screen industries needs to be understood within this complex landscape, an adequate level of support has the potential to facilitate the professional development of creative workers at different stages of their careers. The interviewees in this study indicated common needs with regard to training for different screen industries in Yorkshire and the Humber (film, television, and videogames). These needs included support in (1) providing information about career pathways; (2) management, and leadership training; (3) developing companies in the region; and (4) providing more workshops, mentoring, and other forms of guidance to enable them to gain knowledge about the 'practical' aspects of production. This range of identified training possibilities (or support initiatives) draws attention to the combination of supplementary relationships between the codified and tacit forms of knowledge regarding skills formation in the screen industries. The barriers to introducing effective support for workers in terms of skills development are still prominent because of financial, time, or geographical constraints; however, the interviewees demonstrated that the ability to access support in regard to exchanging experiences and practical information is vital for the development of the screen industries in Yorkshire and the Humber.

5.1 Knowledge gaps and suggestions for further research

In summary, this report identified the following themes and gaps in discussions about skills and training in the screen industries:

5.1.1 Data

Fragmentation. There is a vast array of academic studies, publications and industry reports that aim to assess the skills and training needs of the CCIs, as they are often highly fragmented. The published reports also tend to utilise different data sources, methodologies and terminology, providing a further challenge in assessing skills issues comparatively (see Creative Industries Policy and Evidence Centre, 2019:44).

Screen Industries in Creative Industries. The use of official statistics presents a challenge in capturing adequately the needs of specific creative industries, especially screen industries (Creative Industries Policy and Evidence Centre, 2019:44). The majority of reports focus on skills mismatches in the context of broadly defined creative industries, though they do not discuss the specific needs of the screen industries (see Creative Industries Policy and Evidence Centre, 2019). Furthermore, problems relate to data that are not captured in the official statistics, such as data about self-employed

workers or microbusinesses (Creative Industries Policy and Evidence Centre, 2019:44).

Classification Problems. Data problems are also visible in the delays in updates to official characteristics, such as Standard Industrial and Occupational Classifications. These problems result from the fast-paced development of the screen industries, including the development of new occupational roles and business models and the transferability of skills/roles from one screen industry to another (for example, VFX in animation, film and games). This also leads to reports using different types of classifications (see, for example, ScreenSkills, 2019).

Granularity of Data. Official statistics do not provide data granularity in terms of assessing CCI sub-sectors, including screen industries, the sub-sectors of screen industries, occupational roles and regional distribution. Furthermore, studies that aim to capture data about screen industries (such as VFX, videogame animation) encounter further problems with finding granular data to assess the challenges experienced by these industries. The videogame industry is often mentioned as an example of an industry in which skills issues are difficult to assess because of data shortages (e.g. ScreenSkills, 2019; Creative Industries Policy and Evidence Centre, 2019; Mullen et al., 2019).

Terminology Issues. Data used in reports must be further investigated in terms of evaluating and assessing the terminology used. Industry reports often refer to a broad arrays of concerns, such as 'technical skills' or 'management skills', but they need to be positioned according to the specificity and needs of given sub-sectors, work organisation provisions and job roles. There is a need, therefore, to systematise and problematise the terminology used in assessing skills and training challenges in the screen industries.

Beyond Employers. Data about skills issues and training needs are often addressed from the perspective of employers in the screen industries (as skills shortages and gaps). However, these data could be supplemented by the perspectives of workers with different experiences in the industry (e.g. recent graduates, new entrants, experienced workers and freelancers).

5.1.2 Scope

Occupational roles. There is a need to develop a more systematic and updated list of occupational roles in the screen industries. The published reports and institutional providers (such as ScreenSkills, 2020) offer some insights into occupational roles in

the screen industries; however, these lists are often not updated systematically to capture the variety and development of new occupational roles in the sector.

Not only Film and TV. There is a data imbalance and research focus on skills mismatches in the film and television industries, with less attention being paid to skills mismatches in animation, VFX or videogames (ScreenSkills, 2019a:55).

Skills Migration. There is a need to provide further insights into assessing the migration of skills and roles to different sub-sectors and industries. For example, this assessment may consider the transferability of skills from one screen industry to another (for example, the role of animators in the videogame industry), as well as the transfer of other roles, such as accountants, construction or hair and make-up, to the screen industries (film and televisions industries).

5.1.3 Focus

Skills Needs in the Context of SMES. Considering that most businesses in the screen industries are micro businesses, further research projects could explore approaches to skills issues and provide training in the context of small, medium and micro companies.

Developing the Local Talent Pool. Screen industry companies and workforces are concentrated in London and the Southeast parts of England (except for the videogame industry companies); therefore, future research projects could investigate specific challenges in skills and training development in particular regions and screen industry sub-sectors.

Freelancers and Skills Development. According to the data provided by ScreenSkills (2019), training supported and offered by screen industry employers varies across the sub-sectors. Considering the different forms of work organisation and training in the screen industries, there is a research gap in investigating the skills development and training needs of freelancers.

Tacit knowledge. Knowledge about work in the screen industries is often associated with the acquisition of tacit knowledge (understood as ‘learning by doing’ or ‘on-the-job learning’; Howells, 1996). This type of knowledge is also discussed as superior to codified knowledge about screen media production (e.g. learning through formal courses; see ScreenSkills, 2019). However, there is a need for further critical investigation to address the acquisition of this type of knowledge in different production settings, as well as its limitations. Furthermore, it has been acknowledged in studies about screen industries that tacit knowledge is acquired not only in specific work

settings but also through engagement with professional networks and communities both online and offline (e.g. Weststar, 2016). We must acknowledge, therefore, that barriers exist in accessing those settings and networks, and therefore tacit knowledge is not easily acquired for all. Further investigation is required to understand the process of acquiring tacit knowledge not only in the context of particular screen industries but also in relation to the structure and work organisation of production in a given region.

5.1.4 Crises

COVID-19. In light of the ongoing pandemic and its impact on the screen industry production and workforce, future research projects could explore the development of new occupational roles (e.g. COVID-19 assistants, virtual production jobs) and training (from new approaches to health and safety at work to providing alternative forms of training [online] in the sector).

Accessing International Talent, Immigration Policies and Brexit. Many areas of the screen industries search for and employ workers internationally. Concerns with the introduction of new immigration policies have been widely voiced by the representatives of the screen industries (see ScreenSkills, 2019; Ukie, 2017; Tiga, 2015; Animation UK, 2018). There is a need to assess the impact of Brexit and immigration policy on recruitment and maintaining the international workforce.

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Appendix 1: Interviewees

Interviewee	Position	Organisation
Caroline Cooper Charles	Head of Creative	Screen Yorkshire
Glyn Middleton	Head of Skills	Screen Yorkshire
Lucy Meer	Film producer	Strive Films
Jonny Lyons	Development manager	National Film and Television School - Leeds
Rob Speranza	Film producer	South Yorkshire Filmmakers Network
Roxy McKenna	BFI Network talent executive	Film Hub North
Jamie Sefton	Managing director	Game Republic
Dr Charlie Ball	Head of Higher Education Intelligence	Graduate Prospects
Charlotte Michael	Manager Creative Catalyst	West Yorkshire Combined Authority
Gareth Kirkman	Business development	British Film Commission
Samantha Perahia	Head of production UK	British Film Commission

Appendix 2: Glossary

Apprenticeship – According to the International Labour Organisation (ILO), the term refers to 'systematic long-term training for a recognised occupation taking place substantially within an undertaking or under an independent craftsman [which] should be governed by a written contract of apprenticeship and be subject to established standards' (ILO, Vocational Training Recommendations, 1962; section 10/paragraph 46). In the UK, apprenticeship is approached as genuine job, and the apprentice needs to be employed from day one (and earn a real wage). Apprenticeship combines elements of off-the-job and on-the-job training, with off-the job training compromising of 20% of the working time. Apprenticeship leads to the acquisition of industry-standard qualifications. They need to last at least one or five years depending on the level of qualification (see gov.uk, 2020b).

Informal learning provisions – These include on-the-job training through mentoring or shadowing and are the most prominent learning provisions in the creative industries, including screen industries (see ScreenSkills, 2019a). This term is used in contrast to learning provisions provided in codified, formal settings (such as those leading to obtaining specific qualifications or degrees). However, the majority of reports avoid using this false dichotomy between formal and informal training in the screen industries because of the blurred lines between the two categories.

Occupational community – This term refers to a group of workers who, through their identification with a performed occupation, share common sets of values and norms (Salaman, 1974). Occupational communities are established beyond geographical locations and the boundaries of workplaces.

Skill - According to International Labour Organisation (ILO, 2020), 'skill' can be defined as 'the ability to carry out the tasks and duties of a given'. The definitions of skills differ in terms of references to specific occupations (industry reports) and to applied theoretical orientations (academic research). Consequently, the term 'skill' presents various competing definitions. Some of the components of the definition refer to: (1) the abilities of the worker, (2) the skills that are required in the job and (3) the socially constructed skills through which economic actors utilise power resources.

Skill gaps - The term designates the extent to which workers lack the skills necessary to perform their current jobs (McGuiness et al., 2017:8). In reports concerned with skill mismatches in the screen industries, the skill gaps identified range from management and communication skills to the ability to use a particular software.

Skill issues - The term is used in some reports (e.g. Bakhshi and Spilsbury, 2019:5) as a combination of factors which leads to skill gaps and skill shortages. It is sometimes used as the equivalent of 'skill mismatches'.

Skill mismatches – This broad category of issues leads to 'a discrepancy between the skills that are sought by employers and the skills that are possessed by individuals' (ILO, 2020). Overall, the term encompasses a combination of skill gaps and skill shortages, as well as other reasons for difficulties in finding particular skills such as skills obsolescence. It designates a broad category of problems in finding given skillsets but frequently puts the focus on individuals' abilities and predispositions rather than on structural problems.

Skill obsolescence - when workers lose their skills over time because they are not used or when skills become irrelevant due to changes in the employment landscape (see ILO, 2020).

Skill shortages - The term refers to 'a situation whereby employers are unable to fill key vacant posts due to a lack of suitable candidates' (McGuiness et al., 2017:2).

'Soft skill' - The term was popularised as part of a shift away from the perception of skill as associated with technical knowledge and extended training. The definition often encompasses skills required to deal with others and managing oneself and one's emotions in the workplace (see Hurrell et al., 2012). The term has been widely debated because of its vague meaning – for example, questioning if the set of behavioural requirements and personal attributes for a given position could be called 'skills'. Furthermore, the term contributes to false dichotomy between technical, hard, skills and social, soft, skills, which does not acknowledge that every type of occupation requires a combination of subject-specific knowledge and knowledge about cooperation with other people. In some reports the term is also used interchangeably with terms such as 'meta skills', 'social skills' or 'transferable skills'.

Tacit knowledge – This refers to knowledge that is non-codified, not-explicit and often acquired through learning by doing in the context of a specific industry or occupational context. The acquisition of tacit knowledge is often cited as more vital to the learning process (in the context of jobs in the screen industries) because of (1) the lack of formal, codified pathways into the screen industries; (2) the emphasis on experiential learning and (3) the fast-paced changes in the screen industries (from business models to the technology used).

Traineeships – This refers to a vocational skill development programme which includes a work placement. The work placement must last at least 100 hours.

Traineeship can serve as a preparation for a job or apprenticeship. It can last from six weeks to one year, although the majority of traineeships last less than six months (gov.uk, 2020a). There is no requirement to pay trainees or give them expenses (ibid).

Training needs – This broad term refers to any form of training provisions identified based on an acknowledged skills shortage (e.g. lack of workers for senior positions) or skills gaps (e.g. a deficit of certain skills in the existing workforce).

Appendix 3: Skills Mismatches in Yorkshire and the Humber

Sector	Career Stage	Skill shortage	Career Stage	Skill Gaps	Career Stage	Training Needs	Mode of Delivery
Film industry	All stages	• Assistant Directors • Gaffers • Construction • Sound • Sparks • Production coordinators • Production accountants	Entry stage	• Interpersonal skills • Etiquette of production process • Teamwork • Presentational skills • Knowledge about production process* • Developing one's self-brand and reputation	Entry stage	Information about occupational positions, career development and opportunities Knowledge exchange about practicalities of production process Support in networking, self-branding, visibility online	Collaboration between educational institutions and the industry in preparation of resources for new entrants. Workshops Mentoring Peer-to-peer support
	Mid-senior stage	• Editors • Line producers • Production managers • Script Editors	Mid-senior	• Personnel management training • Logistics of production – management and organisation of	Mid-senior	Developing one's self-brand and reputation Establishing and developing one's company	Mentoring Networking Peer-to-peer support (Workshops) Drawing on examples

				• production process • Business development • Self-branding		Management and leadership training Equality, Diversity and Inclusion training	from other industries (good practices in management) Unconscious bias training
Sector	Career stage	Skill shortage	Career stage	Skill Gaps	Career stage	Training needs	Modes of Delivery
Television industry	All	• Camera operators • Self-shooting camera operators • Production accountants • Production secretaries	Entry	• Interpersonal skills • Etiquette of production process • Teamwork • Presentational skills • Communication skills • Knowledge about production process • Developing one's self-brand and reputation	Entry	Information about occupational positions, career development and opportunities Knowledge exchange about practicalities of production process Support in networking, self-branding, visibility online, pitching	Collaboration between educational institutions and the industry in preparation of resources for new entrants. Workshops Mentoring Peer-to-peer support
	Mid-senior	• Film editors	Mid-senior	• Personnel management training	Mid-senior	Developing one's self-brand and reputation	Mentoring

		• Production accountants • Production coordinators • Production managers		• Logistics of production – management and organisation of production process • Business development • Self-branding		Establishing and developing one's company Knowledge exchange about organisation of production process Management and leadership training Equality, Diversity and Inclusion training	Mentoring for workers from marginalised backgrounds Networking Peer-to-peer support (Workshops) Drawing on examples from other industries (good practices in management) Unconscious bias training
Sector	Career stage	Skill Shortage	Career stage	Skill gap	Career stage	Training needs	Delivery
Videogames	Entry	• C++ programmer • Concept artist	Entry	• Interpersonal skills • Teamwork • Presentational skills • Knowledge about	Entry	Information about occupational positions, career development and opportunities Knowledge exchange about	Collaboration between educational institutions and the industry in preparation of

				production process		practicalities of production process Support in networking, self-branding (connecting with the industry)	resources for new entrants. Workshops Mentoring Peer-to-peer support Networking opportunities
	Mid-senior	• Senior producer • Senior programmer (various specialisations)	Mid-senior	• Networking skills • Business development knowledge • Logistics of production – management and organisation of production process	Mid-senior	Developing one's self-brand and reputation Establishing and developing one's company Management and leadership training Equality, Diversity and Inclusion training	Mentoring Networking opportunities Peer-to-peer support Unconscious bias training

*Skills mismatches identified by the interviewees are not necessarily limited to/specific to Yorkshire and the Humber region. Certain skills mismatches have been also identified as nation-wide problems. This issue further highlights the importance of recognising skills

shortages within specific socio-economic context of a given region (e.g., socio-historical development of screen industries, available infrastructure, workforce distribution, types of productions available).
*All three screen industries (film, television and videogames) share many commonalities in terms of identified skills gaps (see also section 4.3, table 4.3a).