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Communicating health and safety on a multinational construction project: challenges and strategies

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Abstract

The health and safety (H&S) of workers is a critical project management goal in construction. As globalisation and migrant movement increases, construction projects are becoming more nationally diverse. Amongst multinational workforces, language barriers present an obvious but largely unresolved H&S communication challenge, with current strategies in use yet to be assessed. On a large construction project in the United Kingdom, H&S communication strategies were explored through an ethnographic approach. This paper contributes by revealing the impracticalities of using employees as interpreters in workgroups of six or more; the limitations of technologies in a dynamic construction site environment, and highlights the unresolved challenge of translating safety videos in multiple languages. Challenges arose including translators refusing to translate, as they were not receiving extra financial benefits and it was not recognised as part of their workload; and translators being given favourable treatment during disciplinary processes as they were crucial to the continued operation of the site team. This reveals the complexities involved in implementing effective H&S communication strategies on international and multinational projects, which have previously remained largely ignored.

Keywords: Communication, ethnography, multinational, migrant workers, safety

Gary, one of the H&S advisors, and I drove towards his area of the construction site. New migrant workers from the Czech Republic had recently arrived on site, and he had posters with visuals and safety messages in Czech prepared, laminated, and ready to be fixed to the walls of the welfare unit. I took the posters and he grabbed the pins and staple gun as we exited the site vehicle; I tightly held onto the posters as we walked across the site in windy conditions. Gary said to me:

'keep an eye out for the translator – he should have a black band on his hard hat.'

We passed several small groups of migrant workers. 'Alright lads' was Gary's opener, but there was no response each time, and no black band in site. We walked into an empty welfare unit. There was high visibility clothing hanging up to dry; unwashed dishes piled up in the sink; newspapers spread out on the tables; and the H&S policies and procedures stapled on the wall in English. Gary turned to me:

'I don't know if this is where the Czech guys are based. There is no point in putting these up if we are in the wrong unit, and you can't ask anyone [because of language barriers]. There are clearly problems with this one-in-six translator policy [one English speaker to every six non-English workers in a team]. What happens when half the team is on site, and the other half is in the office? The English speakers are usually the office guys, the project managers, or the engineers, or even the foreman – we could be looking in completely the wrong place. And what if they are away training, or ill or on their jollies [holidays], or just not wearing their black band? Then they aren't much help if you are trying to communicate with the guys out on the park [the construction site].'

The development of health and safety (H&S) notices in different languages and the use of translators or interpreters are common strategies for managing communication on multinational construction projects. However, as illustrated above, the effective implementation of these strategies in practice is not always straight forward.

Introduction

The opening extract is from an ethnographic study of a large multinational construction project in the United Kingdom (UK). Communicating health & safety (H&S) messages in such contexts can often be a construction project management challenge, and one which remains largely unresolved. Bust et al. (2008) stressed that a new approach to H&S management is likely to be required for internationally diverse projects in all countries, where many different languages may be present. Employers in construction across the world are tackling this problem in similar, yet myriad ways. These include, the use of multi-lingual supervisors, visual communication methods (Dainty et al., 2007; Bust et al., 2008) including films and cartoons (Kivrak et al., 2013), and translating instructions and guidance (inductions, tool box talks and training materials) into workers' first languages. However, there is little evidence to support the effectiveness of such initiatives, and a lack of empirical investigation into these methods (Bust et al., 2008). Hence, there is a clear need to evaluate the strategies being used in practice. This study, utilising empirical evidence from an ethnographic research project, takes a step to close this gap by assessing the strategies used for H&S communication on a large multinational project.

Migrant workers make up a significant part of the construction workforce at a global level, and the UK is no different (Bust et al., 2008). There is no universally accepted figure for the number of migrant workers in the UK, and statistics on their nationality or migration status are limited and uneven (Pink et al., 2010), although it has recently been estimated that they make up around 12% of the UK construction industry site-based workforce (in 2015 this amounted to approximately 240,000 people) (McMeeken, 2015). The presence of a migrant workforce within the construction industry, be it on a UK or global level, is somewhat inevitable; but statistical evidence suggests they are unfortunately at greater risk on site, with migrant worker deaths in construction over twice that expected (e.g. Centre for Corporate Accountability (CCA), 2009, Health and Safety Executive (HSE), 2011). Meardi et al. (2012) found overwhelming confirmation that H&S risks are most likely higher for migrant workers; but statistical evidence for this in the UK is scarce, as numbers in accident data sets are either too low to be statistically significant or data-sets do not include nationality.

The inherent variation in demand for products and the project based nature of the construction industry requires a workforce that is flexible, transient, and peripatetic. Migrant workers can therefore make a significant contribution. The importance of migrant construction worker movements was highlighted in a study on six European countries (Italy, Portugal, Germany, the UK, the Netherlands and Switzerland) by Fellini et al. (2007), which found that there were labor shortages in all countries except Germany. The authors explained that company decisions on the recruitment of foreign workers were guided by two main (interconnected) aims: coping with labor shortages and minimising labor costs. Low-cost migrant workers can help in meeting the typically tight project schedules and profit margins associated with the construction industry. However, the growing reliance on migrant workers can further increase the cultural complexities of site management. There are especially issues with the health and safety management of an international workforce, associated with different working practices, management practices, worker welfare, and rules and regulations (Oswald et al., 2017).

The UK can be considered an ‘advanced safety country’, in that there is an established, respected and intricate system of regulations that is designed to increase pressure on companies to provide safe workplaces (Coulter, 2009). Migrant workers that come from countries with less rigorous legislative constraints on construction health and safety should therefore be able to take advantage of a safer and healthier working environment in the UK. However, this is not always the case, with Guldenmund et al. (2013) concluding that migrant workers formed a vulnerable group in the three European countries (Denmark, Netherlands, and the UK) that were the focus of their study. They argued that the scale of the migrant worker ‘problem’ will remain largely elusive, as long as numerous migrant workers remain unregistered in their host country, and the national accident records are not adequately coded. This highlights the need for further investigation into the H&S experiences of migrant construction workers.

Perhaps the most obvious challenge of a multi-national workforce is communication, both inter-organisational and inter-personal. Although the UK consistently has one of the lowest rates of fatal injury across the European Union (HSE, 2015), an increase in migrant workers has created additional safety management challenges. Bust et al. (2008: 585) suggested that the increase of migrant workers had 'put pressure on the management of health and safety at a time when the UK construction industry was progressing from relative successes in tackling safety issues to dealing with the health of construction workers'. Such increases in pressure stand to undermine efforts to improve the health and safety record of UK construction. This makes it essential to understand exactly how health and safety communication is managed amongst an international workforce, and what can be done about it.

The aim of this paper is to understand the challenges that the H&S department had in communicating with non-English speaking migrant workers on a large construction project in the UK; and to assess the success of the strategies that were put in place to overcome these challenges. Although inevitably grounded in a UK construction industry context, that many projects in many other countries also draw on migrant and multinational labor for their site workforce means this research is applicable at a global level. The specifics of the nationalities and languages involved is arguably less important than the H&S management strategies employed to support their safe employment within an environment in which their first language may not be that of the country in which they are working.

Communicating H&S on multinational construction sites

Health and safety is an emerging criterion for construction project success, supplementing the classic 'Iron Triangle' model of time, cost, and quality (Alzahrani & Emsley, 2013). In construction projects, a high level of collaboration among project teams is essential in order to achieve project success (Wu et al., 2017); and effective safety communication between all parties is an important part of safety performance (Jin et al., 2015). The UK Health and Safety Executive (2005) recommended that effective H&S communication within an organisation needs to occur in three directions:

- top-down: management to frontline workers;
- bottom-up: frontline workers to management; and
- horizontal: between peers or functional groups.

Such multi-directional communication can be more problematic on projects where language barriers are present. These barriers are a well-documented construction migrant labor challenge, (e.g. Trajkovski and Loosemore 2006, Bust *et al*. 2008, Tutt *et al*. 2011, 2013; Hare *et al*. 2009, 2012; Guldenmund *et al*. 2013, Oswald *et al*. 2014, 2015) as H&S standards, regulations, and accepted ways of working can vary significantly from country to country, and such variations need to be clearly communicated. In the UK, the Health and Safety Executive (HSE 2013) highlights a potential increase in risks for migrant workers on sites, attributing this to differences in language, culture, and understanding of UK health and safety legislation.

Dainty et al. (2007:2) identified that 'migrant workers clearly face additional challenges in terms of the relatively short periods of work in the UK, their limited knowledge of UK health and safety systems, the ability to communicate with co-workers and supervisors, and in gaining access to appropriate training'. McKay et al., (2006) found that two-thirds of migrant workers actually received no safety training, and the other third received a short site induction that was often not understood or communicated effectively. Hare et al. (2009) argued that an essential starting point for improvements is the development of effective methods to support the communication of health and safety knowledge between non/low English speaking construction workers and English-speaking site managers. Chan et al. (2016) suggested providing safety training in ethnic minority languages; and Trajkovski and Loosemore (2006) also recommended that safety training be provided in a variety of languages, which was an approach strongly supported by non-English speaking migrants in their study carried out in Australia. However, concerns have been raised that this may hinder the integration of migrant workers into the host nation's workforce, and could also discourage them from learning English at all (Commision on Integration and Cohesion, 2007). Hare et al. (2013) stated that providing English language courses is considered the best long-term investment. However, it would be a fallacy to assume that all English-speaking workers are safe, and the consideration that this approach is 'the best' needs to be further unpacked in terms of research knowledge. Most migrant workers are employed in the short term (McKay et al., 2006), which inevitably challenges any long-term communication strategies such as language education. Hence, even if financial investment was forthcoming, the logistical management of such courses on a short-term project-by-project basis is likely to be impractical. Thus, the most effective way to manage H&S communication on site is still unclear.

Tutt et al.'s ethnographic approach (2011) highlighted that the large increase of workers from Eastern European countries into the UK was presenting considerable additional challenges to employers' efforts to manage safety. The HSE (no date) recommend the following on-site strategies:

- English for Speakers of Other Languages (ESOL) courses for workers;
- Asking an employee who speaks good English to act as an interpreter;
- A buddy system of experienced workers with new or inexperienced migrant workers who speak the same language;
- Employ the services of a professional (accredited) interpreter;
- Provide written information in a relevant language(s), but ensuring they use a competent translator familiar with any technical terms; and
- Nonverbal communication to get the message across: for example DVDs or videos, audio tapes, and/or internationally recognised signs and symbols (which could include hand signals).

Bust et al. (2008) argued that issues relating to literacy, language and the communication of health and safety information also require further investigation, and that the effectiveness of management solutions to communication problems, such as the use of interpreters, needs to be assessed.

It can be argued that the effectiveness of such approaches can only be assessed through observing these activities in practice. Using an ethnographic approach, this paper explores the H&S communication within a multinational workforce on a large construction project (+£500m) in the UK. The following section details the approach used for data collection and introduces the concept of 'Communities of Practice' that has been used for data analysis. The results are then presented thematically exploring, in turn, whose job it is to translate; the responsibilities and rewards of being multilingual and; communication problems in practice. The results and conclusions sections highlight the implications of these findings for H&S management amongst an international workforce. In particular, this makes suggestions for how current strategies might be developed for more effective H&S management.

Method: observing health and safety communication on site

Ethnography studies specific groups in their natural setting, usually through participant observation (Phelps & Horman, 2010). Since the 1960s and 1970s, ethnographic research methods have been widely used by communication scholars (see, for example, Hymes, 1962), and amongst construction industry researchers there is a growing awareness of the utility of an ethnographic approach (Pink et al., 2012). Amidst increasingly complex operations, and a growing diversity in the construction workforce, understanding construction processes is becoming increasingly challenging. Ethnography offers a route to a deeper understanding of the actualities of social practices, relationships, and knowledge that inform the ways construction workers perform on site (Pink et al., 2010). In particular, observational research seeks not to intervene with the activities being investigated (Alder & Alder, 2000). This makes ethnography particularly suitable for studying sensitive issues (which include safety in construction), and providing rich, detailed descriptions about topics (Li, 2008). Consequently, ethnography is arguably a highly appropriate method for this investigation of on-site health and safety communication.

The project and participants

This paper draws on data from an extended, three-year ethnographic study of a large civil engineering construction project (+£500m) in the UK. A multinational joint venture had been created between four organizations (based in Europe and North America) with approximately 100 non-UK workers on site at any one time. These were predominantly from the Czech Republic, Spain, Portugal, and the United States; but there were also workers from Romania, Croatia, Bulgaria and Poland. The total population on the project was approximately 1100 workers, but there was a high turnover throughout its duration. The numbers of migrant workers on site fluctuated due to works and contractor changes, which ultimately led to many personnel changes over the study period. Migrant workers undertook roles at different levels within the project's hierarchal structure including as project managers, H&S advisors, foremen and operatives. As this was a civil engineering project the operative trades were typically ironworkers, welders, scaffolders, concrete placers, carpenters etc. The majority of migrant workers were typically at foreman or operative level, and they often worked in nationally homogenous groups (e.g. Czech nationals would work together).

They were almost all male, and had a range of industry experience; some operatives had not worked in the industry before, while some project managers had 20+ years' experience. The levels of English-speaking ability also varied. Many at operative-level (site-based) did not speak any English, while all the office-based migrant workers, who were typically project managers or H&S advisors, were fluent. The foremen were supervisors of the operatives and had both site-based (e.g. supervision of the works) and office-based (e.g. paperwork) roles; their levels of English varied, with some being fluent, and others speaking in 'broken' sentences.

Access to the site for the researcher was ensured by a contractual agreement between the construction organisation (which had a Key Performance Indicator of supporting research) and the researcher's University. The employee that granted official permission for the project acted as the initial point of contact. Once on site, health & safety advisors acted as key informants, but also as gatekeepers, allowing access to observation opportunities. Each H&S advisor had a different physical area of the large construction site under their remit, and they would offer H&S support and advice to the different construction teams working within it. Because of their access to various areas, H&S advisors were able to ease the passage of entry to the field, and make the surroundings and contexts more visible and understandable. From here, a snowball sampling strategy was used, whereby these gatekeepers introduced a range of possible informants, who were then approached for additional data collection opportunities.

The researcher was limited to speaking to those who had basic to fluent English language skills. While this was the majority of available research participants, the researcher was unable to communicate with some of the foreign operatives. As the research aim explored in this paper unpacks the challenges communicating with multinational workforces, and members of the H&S team (both UK-based and non-UK-based) acted as gatekeepers, the views, opinions, and actions of this H&S team were also captured within this study. Middle-managers, such as the foremen (both UK- and non-UK-based) were also valuable participants, as they also communicated and managed H&S. The anonymity of all participants and the case study project has been protected through the use of pseudonyms.

Data collection

During the study, over 1500 hours were spent at the research setting, over 200 field records were written and 150 units of documentary data were collected. An overt research approach was used and the researcher did not hide the fact that health and safety was the topic of the investigation. As a male of White-British origin, the researcher blended in with site workforce, despite it being a multinational project. The researcher was viewed by construction employees as having an apprentice or trainee-like role, with the assumed understanding that he would go on to gain employment as a H&S advisor in the future. This role created a social expectation for the researcher to ask many questions, which was helpful to understand the actualities of the construction practices being undertaken.

The researcher 'followed the action' (Goffman, 2005) of where unsafe practices were occurring. In this approach, ethnography is emotionally charged, uncertain and even risky; features that make it interesting and capable of delivering profound insights (Marshall & Bresnen, 2013). This role included site walk-arounds, on site ad-hoc discussions with workers, and being present at accident and incident responses. These activities afforded the opportunity to observe and query health and safety activities as they were taking place, and engage with all actors on site. The researcher also attended weekly site safety meetings, where H&S advisors would discuss examples of both positive and negative H&S undertakings. The primary mode of recording these observations and interactions was through note-taking in the field where possible, as well as making more detailed notes as soon as possible after the observation (Pole & Morrison, 2003). A variety of tools were used for taking initial fieldnotes according to their suitability in different situations. These included: typing notes into the researcher's mobile phone; direct input into a computer when access was available in the office; or writing on hard copy minutes when in meetings. Conversations and observations were supported with available documentation, including: safety observation reports and meeting minutes. Photographs were rarely used because of the sensitive nature of the H&S events being observed. To ensure data collection consistency, establish rapport with participants and to reduce the risks of reactivity, such as the Hawthorne effect, a protocol was developed specifically for the project (see Author et al. 2014)

Data analysis

The data collected was analysed through an iterative approach, moving back and forth between data and theory to arrive at a series of themes, including: 'time pressure', 'safety observation reporting', and ‘blame culture’. This article draws specifically on the emergent theme of ‘H&S communication challenges’, which was prominent in the data. Through this iterative-inductive approach the analysis became progressively focused; adopting the characteristic ‘funnel structure’ of ethnography (Hammersley & Atkinson, 2007:160). Internal reliability in the data analysis was sought through triangulating multiple data sources, and asking informants from the field to comment on interpretations of the data. Ethnographic researchers spend long periods being amongst participants and this mode of data collection allows for continual data analysis and refinement. NVivo was used to store, organise, and thematically analyse the data, which was coded according to ideas associated with ‘Communities of Practice’. This concept has been used by construction scholars to think about how novices learn safety on construction sites, how knowledge is managed by partnered construction organisations, and how migrant workers adopt on-site practices (Gherardi & Nicolini 2002; Koch & Thuesen 2013; Tutt et al. 2013a). The phrase Community of Practice (CoP), developed by Lave and Wenger (1991), is indicative of “participation in an activity system about which participants share understandings concerning what they are doing” (Lave & Wenger, 1991: 98). According to this concept, learning is a process of being an active participant “in the practices of social communities and constructing identities in relation to these communities” (Wenger 1998: 4, emphasis in original). There are three aspects of CoP that are used to discuss the empirical material presented in Section 4: the construction of identities, varied degrees of membership in the community, and learning processes. Each of these will now be briefly explored.

Identity in the community

Operating within a community is more than participating in a certain set of activities. It is a social undertaking that requires becoming ‘a kind of person’, or assuming a particular identity (Lave & Wenger 1991: 53). Membership within the CoP “offers form and context as well as content to aspiring practitioners, who need not just acquire the explicit knowledge of the community but also the identity of a community member” (Duguid, 2005: 113). Wenger notes that identity is “not merely a category, a personality trait, a role, or a label" (1998: 163); instead, its development is a continuing, complex process, achieved through extended participation in the practice of the community. This idea is valuable for thinking about whether migrant workers given the task of translating actually consider this as part of their identity, and in turn, who takes responsibility for H&S amongst migrant workers in construction.

Degrees of membership in the community

Construction projects often rely on heterogeneous and temporary groups, and individuals may not share the same level of membership in the community. Indeed, in their selection of the term 'community', Lave and Wenger "assume that members have different interests, make diverse contributions to activity, and hold varied viewpoints" (1991: 98). In this, membership can be valid through participation at multiple levels in the community. Many studies applying this approach have been based in environments where the individuals being studied (and thus the 'community') are situated in the same place, for example the construction site (Gherardi & Nicolini 2002; Koch & Thuesen 2013; Tutt et al. 2013a). However, it is important not to assume that co-location equates to homogeneous practice, particularly when workers with different language capabilities are on site. Indeed, Koch and Theusen (2013: 160) note that temporary groups might lead to "multiple memberships of communities with different degrees of participation". This is particularly important for construction health and safety, where all members of site are expected to be operating according to the same rules.

Learning in the community

Learning to be a member of a particular CoP is achieved through a process of 'legitimate peripheral participation'. This term is intended to capture the social dimension of knowledge, suggesting that learning is situated in, and an integral part of, social practice (Lave & Wenger 1991: 35). 'Legitimate peripheral participation' is intended to capture different aspects which are essential to the social learning process: legitimacy infers accepted ways of belonging, whilst peripherality captures the varied, more or less engaged, ways of being a part of the community (Lave & Wenger 1991: pp.35-6). This composite concept has been used to understand the on-going learning work of community members (see for example, Brown & Duguid 1991; Koch & Theusen 2013). Importantly, a common language (be that verbal or otherwise) is an essential requirement for developing knowledge, as it enables the flow of information within the group (Koch & Theusen, 2013).

Through these three aspects of community membership, three important ideas associated with H&S communication challenges have been identified. These are presented in the following three sections: Translator identities: whose job is it?; Varied community memberships: the responsibilities and rewards of being multilingual; and Learning to communicate: problems in practice.

Results

Translator identities: whose job is it?

Communication within a multinational workforce was a predictable challenge that was duly raised by the H&S team when preparing for the arrival of migrant workers. Formal protocols were put in place in an attempt to improve the flow of safety messages and communications. These included multi-language signage, wallet cards to be developed with common statements, and the identification of English speaking translators by the addition of black bands to their hardhats. The use of interpreters is a common approach on multinational projects (Bust et al., 2008), and was the main strategy adopted on this project. Specifically, the project policy was that for every six non-English speaking migrant workers, at least one interpreter was required. The terms ‘interpreter’ and ‘translator’ were used interchangeably on-site, and so have also been used as such in this paper. Whilst translation may seem a simple way of ensuring health and safety communications are passed on to those without English as a first or indeed any language, this approach generated several challenges in practice.

A predominant issue was that individuals were never employed with the sole task of translating. Instead, they juggled this role with other on-site activities as Dmitri, a H&S advisor, explained whilst in the H&S office:

Dmitri exhaled a large sigh and shook his head. I looked up from my laptop, caught his eye, and asked: 'What's up?'
Dmitri replied: 'Sometimes I just wish I didn't speak Polish.'
I laughed as a smile came to his face. He spread his arms and opened the palms of his hands directing them towards his computer and added: 'I've just come back from translating an induction; I need to do the briefs every morning; and now I've just received an email asking to translate something else. I feel like I spend about 40% of my time on 3% of the job.'

The H&S advisors were not usually required to be at the morning briefs, but Dmitri's attendance was necessary to perform translation duties and he was repeatedly asked to undertake translation for small workgroups. He estimated that this activity constituted '3%' of his work area, yet he felt he spent '40%' of his time on it. Here, Dmitri, who spoke three languages, identifies the proportion of time used to carry out the translation of safety briefs and induction information, but did not recognise this as a significant part of his role. Thus, translating only featured as a very small part of Dmitri's worker identity, and became a frustrating thing to juggle amongst his other, more valued, tasks.

As a H&S advisor, translating health and safety information for colleagues might still be considered as an aspect of Dmitri's identity. However, many bilingual workers, including operatives, foremen, engineers or project managers, were also asked to translate in an even more informal capacity. For these workers, the amount of time spent translating was particularly frustrating. Dmitri explained:

'I'm not the only one frustrated, there are guys [bi-lingual workers] out there [on-site] that refuse to wear their black bands. One of the guys told me that his job description says steel fixer, not translator. Though he understands English, if you speak to him in English, he will just say "que?" (he laughed).

I enquired: 'so he is just point blank refusing to do it?'

Dmitri explained: 'well he would be willing to do be a translator, if he was paid extra money to do so'.

Being asked to translate was common for bi-lingual workers, including operatives and foremen. Their translating tasks included being called away from site to help with interpretation during the H&S briefings, translating conversations on site, safety documents, and other H&S messages. For some, these tasks were not recognised as part of their worker identity; they became so frustrated that eventually they refused to co-operate. If the H&S advisor was frustrated with the time and efforts required for such translations, it is perhaps unsurprising that those who are on site to earn money working at their construction trade (identifying as operatives or engineers, for example) and whose pay may be linked to their productivity, are even more reluctant to become involved. Furthermore, given their limited time on site, it is unlikely that these workers have the time or inclination to reconceptualise their identity in this way. Although learning is only possible through engaging in the practices of the community, in the case of translating, the informality of the process and a lack of financial recognition for interpretation activities actually became part of the problem.

The project policy of having one English speaking interpreter for every six non-English speakers was under constant strain. Translators could not be physically present to interpret at all times due to: geographical fragmentations (site and office); training courses; a high turnover; resistance from migrant workers to act as translators; holidays and illnesses. Indeed, the opening extract of this paper gives an example of a communication barrier due to the translator not being available; and this happened several times during this research. This unavailability disrupted the communication flow and made the one-in-six policy frequently unworkable in practice. This was raised numerous times by the H&S team. However, the translators became so important for the operation of the site that, in some cases, they were given what was viewed as preferential treatment. This created perceptions of inequality and inconsistency in the application of the rules, as discussed in the following section.

Varied community memberships: the responsibilities and rewards of being multilingual

Translators were not only valuable for safety communication, but they also became highly trained and skilled members of the community. Normally ‘safety representatives’ would be nominated and selected for the role by their work colleagues, but this changed after the arrival of migrant workers. Instead, those that were bilingual were automatically asked to take on the role. In addition, bilingual workers would be asked to undertake training in, for example, work at height or first aid. As members of the community with this precious translating skill, they were put forward for these additional duties so they could subsequently explain the work processes and H&S requirements to their non-English speaking colleagues on site. Many of the translators did not have this role as a formal part of their job description; however, with this additional training, an increased reliance was placed upon them. As Roger (H&S advisor) explained:

‘They could be away for training [so they can’t translate on-site]. They are being trained for everything, and I don’t know about your areas, but Jim [Construction Manager] thinks they have too much responsibility’

In taking on these additional duties translators had to spend time off-site for training, resulting in these valuable members of the community being ironically unavailable for the actual task of translating for large periods of time. However, Roger’s comments also demonstrate the concern that some members of the site team held about the level of responsibility placed on the translators. The interpreters were not health and safety professionals, and could at times be found breaking the H&S rules themselves. Their additional training and responsibilities would often help them when ‘caught’ doing unsafe acts, as Fred (H&S advisor) explained when discussing the repercussions of a health and safety infraction during one meeting:

'*Technically it is a red card [dismissible offence] but your bilingual foreman is a different kettle of fish to your subcontractor operatives. If a subbie [subcontractor worker] was trying to float up there like that foreman, he wouldn't step foot on the job again; but like last time, and the time before, we will see this get rescinded by the powers that be, and that will be turned into a yellow card. It is not a level playing field. And that throws your "one project one team" culture that senior management are trying to push out the window*.'

Serious violations, such as working at height without adequate fall protection, often led to disciplinary action. The project used a green, yellow, and red card scheme – green cards were used to highlight positive safety behaviours, yellow cards were used for the first safety violation, and red cards (or dismissal) for the second. Serious violations could bypass yellow cards and go straight to red. The H&S team believed there were inconsistencies with the use of the disciplinary procedure, with some community members, such as the highly trained and bilingual foremen, being privileged and excused more than others. This demonstrates how, despite working within the same community, these varied memberships can lead to quite distinct manifestations of H&S rules. Further, the client expressed their dissatisfaction with the safety practices occurring on the site to the H&S department when standards were not met. For example one H&S client employee stated to the researcher on a site walk-around:

'...it is the different working practices. The photos speak for themselves. We have guys hanging out MEWPS [Mobile Elevated Work Platforms], working at height on beams not clipped on or tied to blue rope; and some of these guys are the supervisors… and you are like, "hang on, you are the guys giving the briefs in the morning?''

Different nationalities had different working practices, and distinct perceptions of appropriate ways of working. In this case, the client sent photographs of safety violations to the H&S team to express their concerns. As the leaders of a workgroup, bilingual foremen had influence over how their workers would undertake tasks. When this way of working was deemed to be unsafe by UK standards, and the client witnessed such acts, they would contact the H&S department. The client was concerned about what the bilingual foreman were communicating to the workers, as safe or unsafe; the H&S team were also concerned about whether their H&S messages were being delivered. This is indicative of the power that particular, multi-lingual, members of the community held in determining how tasks were carried out and what information was communicated to work teams. Where bilingual workers were unavailable the task of translation was far from straight forward, as discussed in the following section.

Learning to communicate: problems in practice

Many problems arose around verbal communication, as well as with attempts to mobilise technology and the body as tools to try to overcome them.

Verbal communication: 'we have little or no idea what they are saying, or how they are delivering it'

Verbal communication is particularly challenging where members of the workforce do not speak the same language, and there is no translator available. One striking example was during an arranged walk-around with a H&S advisor, a H&S representative from the client and the works manager, where communication problems quickly became apparent:

As we walked through the site we passed an oncoming migrant worker, and Bill, the client's representative, said: 'Alright mate, how you doing?' The migrant worker passed without acknowledgement and Bill turned, shook his head and said to me 'I could have been saying anything'. Another migrant worker approached and he again tried to engage: 'Alright big man, how's it going?' Again the worker passed without any form of acknowledgement. He again turned and looked at me: 'See that. It's frightening, we can't even communicate with these guys. The only way I could get him to stop would be if jumped in front of him waving my hands all over the place.' I nodded in agreement, and then he added: 'This is the biggest problem the project faces'.

In this case, Bill highlighted the difficulty of communicating with an elementary greeting. Shared practice in the community is a foundation for learning (Koch & Theusen, 2013), so not only are these failed acknowledgements awkward for both Bill and the migrant workers, they may be indicative of an inability to share knowledge and understandings. When non-English speaking workers were isolated in this way, it increased the safety risk on the project. For example, an incident occurred when two foreign workers entered an area, signed onto the briefing sheet without being able to read it and therefore understand it, and tried to use the hoist. On the briefing sheet it had stated that the hoist was out of order. Furthermore, neither of the workers were trained to use the hoist and ended up getting accidently locked inside and had to be rescued. Signing briefings and inductions as a matter of course readily becomes a substitution for understanding or shared verbal communication. This lack of shared language is problematic when circumstances change, as they did in this example around the use of the hoist.

Broad accents and slang words that are commonly used on construction sites add yet another dimension to multi-lingual communication problems, including those around safety. For example, in an operation being carried out by a Romanian and a Scottish worker a small steel structure was being lowered onto the back of a trailer, and once it had landed it was light enough that they could push it into place if it was slightly off-centred. The Scottish operative took the lead and said in a very broad accent: '*Wee bit maire on the eirrse of it*'. Or in other words, 'a little (wee) bit more on the back of it'. At the time, the H&S advisor laughed at this, because he knew there was *'no way'* the Romanian worker would understand this communication. Even if the Romanian worker understood English, this is unlikely to be the pronunciation or phraseology that they learnt. If workers do not speak the language, and non-standard phrases and words are used, it can be very difficult to establish *exactly* what has been communicated or indeed, learn the correct community practice. This is especially important with regard to the communication of health and safety messages, where a lack of transparency could have serious implications. This issue was highlighted by Alan, a H&S advisor, during a meeting which was dominated by discussion of the challenges relating to the recent increase in numbers of multinational workers. Alan noted:

'The concern I have is the messages getting through. We are relying on these guys to communicate important messages and we have little or no idea what they are saying or how they are saying it. Are they emphasising the key H&S messages, or is it just a tick box exercise for them?'

On numerous occasions the H&S team would express their concerns about what messages were being successfully communicated. The team were aware that it was difficult, indeed impossible, to check if all of the H&S messages were being communicated, and more specifically the ways in which they were being communicated. For example, if information was being communicated with appropriate emphasis and stressed importance on key areas, or whether it was just being repeated by the translator as a 'tick box' exercise. This was an on-going problem, and a subject that frequently emerged during team meetings and discussions on site. There appeared to be a lack of ideas for any resolution to this particular problem, as there was an absence of engagement and feedback from workers on H&S messages that were sent from senior management. Within a CoP, members do not have to rely on verbal interaction alone for learning. Indeed, meaning can be negotiated through other strategies (Koch & Theusen, 2013); on this construction site these included the use of technology and the body.

Using technology to communicate: 'it came out just complete nonsense! Like hamburgers, sausages, washing powder!'

Technology was used to help translate written safety communications in the office. H&S documents were first put through Google Translate, and then passed to native speaking interpreters for final translation. One of the Czech supervisors, Michael, explained that his responsibilities included delivering the ten-minute H&S brief to the Czech workers and helping translate the safety climate survey to Czech from English. For this, he explained:

'I am given what I think is a Google Translate' (he smiled)…

I asked: 'And how is that?'

He replied: 'Emm no no not good, the sentences…' (he moved his hands around)…

I interrupted: 'are formed in a different way?'

He agreed: 'Yes yes, I think that makes the Google Translate not good.'

The strategy of including a native speaker helped to improve and correct the language to ensure that the document could be readily understood by the workforce. However, Michael identifies some of the challenges with using Google Translate, namely, that this software does not always translate information accurately. Further, documents in different languages cannot be made available for every possible exchange that takes place on a construction site, and, as highlighted in the previous section, translators are not always available for these tasks. Technology was employed in efforts to overcome such language barriers in the dynamic context of the works. For example, one of the site supervisors, Barry, was in the office putting his gloves on in preparation for going on-site. He noted that some new foreign workers had joined last week and there had been some communication issues. When asked how he was working around this, Barry said:

'The translator usually [when he/she is available], but other than that we just been having to use lots of hand and body signals… they seem to get the idea so far. I tried using an app on my phone to translate…'

Me: 'Any luck?'

Barry (shaking his head with a big grin): 'No mate, it came out just complete nonsense!…like hamburgers, sausages, washing powder!'

The use of technology as a strategy to communicate H&S on site had limited success. The mobile phone applications alone could not translate accurately, and more often than not they resulted in comical rather than practical outcomes. In the dynamic construction site environment the technology that was being used (such as apps on mobile phones) was not effective. Other forms of technology were used for communicating safety messages, such as safety videos. Although the images provided some cues, the language used was English meaning that non-English speaking migrant workers' understandings were limited. Translating the subtitles from English to other languages would be a very time consuming procedure. When a H&S advisor asked a bilingual migrant worker to help translate the video, he dismissed it in a light-hearted manner with 'if you pay me another salary'. In this case, the non-English speaking supervisors were not shown the safety video, as it was not deemed worthwhile. A final communication strategy that became apparent through this fieldwork was the use of the body; this is discussed in the following section.

The body as a communication tool: 'You feel like you are doing the Funky Chicken'

Gary scurried into the H&S office. Addressing all the H&S team he exclaimed: 'It is crazy out there! Sometimes you are using so many hand and body movements, you feel like you are doing the Funky Chicken [a dance]. I noticed a welder was working without a fire extinguisher close by, and asked him 'where is your extinguisher', but he did not understand. So I started trying to represent the size of the extinguisher with my hands, pretended to pick it up, and then made the sound of an extinguisher hosing down a fire… however, he still did not understand. I tried again: 'where is your fire extinguisher?', but then he panicked, shouting back at me 'FIRE?! FIRE?!' So I had to quickly reassure him 'No! No! No!'

Gary explained he had to use so many body and hand symbols when the interpreter was not present that he might as well have been dancing. Barriers communicating with the spoken word resulted in understandings having to be negotiated through non-verbal means, but this was far from ideal. Although the communication of some content could be made through body and hand signals, this was limited. Many of the hand signals, such as a 'stop' sign or 'cut throat' action, could be perceived as abrupt and even confrontational by the workforce. One of the client representatives, Bill explained on a site-walk-around that:

'with words I can soften the intervention. Nobody likes being told what they are doing is wrong. With these hands what can I do? [he does a 'stop' and 'cut throat'] There is nothing positive about that.'

Bill, and the other H&S advisors, found it difficult to intervene in a positive manner using hand signals alone. The significance of learning *as part of* the community was demonstrated by the need to establish rapport with workers, which acted as a foundation for ensuring safety standards and expectations were achieved. The H&S advisors relied upon building relationships with workers so they could intervene in a non-confrontational way when H&S standards were not being met.

There were instances where language was simply put to one side, and instead hand signals and other gestures were used for communication. The use of hand signals is already part of the 'language' of many construction sites and readily recognised throughout the industry. For example, the banksman is not always able to talk to the crane driver up in the cab and so a variety of different signals are used for 'raise', 'lower', 'danger' and many more movements of the load. H&S advisors on this project explained how the use of hand signals amongst the team and the workforce had increased in frequency; as the numbers of non-English speaking workers increased and so communication through the spoken word became less effective. Thus, on a multinational construction site, workers are unable to rely on a shared verbal language for communication. However, in this community, workers sought to create a language through other means, for example, the use of technology and the body. These are essential for developing shared, safe working practices.

Discussion

Globalisation and a rise of multinational construction projects has resulted in construction management and engineering studies exploring areas such as: cross-cultural understanding (Chen et al. 2009); managing cultural diversity (Ahmed et al., 2017); and ethnic minority construction workers (Chan et al., 2016). One of the most obvious challenges is how to effectively communicate H&S on multinational construction projects, yet research into the effectiveness of currently adopted communication strategies on multinational projects is limited, and these strategies need to be assessed.

Previous research has found that some migrant workers had such poor English they could barely understand what was going on (see, for example, McKay et al., 2006). Within the construction industry, international project management teams are attempting to deal with such language barriers in similar ways, through the use of translators, visual aids, and documentation in different languages, or a combination of all three. The translators on this project were primarily workers, such as operatives or foremen, who were unpaid for their additional translating duties; this created some resistance. Tutt et al. (2013b) queried whether the informal unpaid translation of H&S documentation is asking too much of migrant workers, since it has little long-term benefit on their up-skilling or moving through the construction sector. They suggested that health and safety translation and interpretation work needs to ‘fit in’ between and around on-going trade work. This research has revealed informal translation work to be a frustrating distraction that proved difficult for bilingual employees’ to accommodate amongst more formal roles, and indeed, often featured as only a small part of workers’ identity. It also identified that interpreters would have frequent absences from the workplace itself, so the one-in-six policy could not be adhered to at all times. It was when interpreters were not available to carry out translation duties, for example, if they were away on training, that their importance became most apparent.

Bilingual foremen became powerful members of their organisations and the site workforce. They were highly trained (for example in first aid, working at height, or as safety representatives) which in itself created problems around their on-site availability as a consequence of increased attendance on courses, as noted above, yet this was undertaken with the understanding that they could then communicate this knowledge to workers. Despite being subcontractors on temporary contracts, they therefore became very important employees and they were the only individuals that communicated top-down messages to their workforces. Hence, all work tasks and safety messages had to be communicated through them.

Being from outside of the UK, they had to adapt to different safety expectations, rules and regulations, and this research found that sometimes they were themselves in breach of safety rules themselves. However, their importance to the site team meant that they were often treated favourably despite such infractions, which in turn could create tensions amongst other workers. Dekker (2016) describes how a 'just culture' – one of trust, learning and accountability – is positive for organisational safety. Where there is a lack of trust due to accountability being dependent on individual circumstances, and community memberships vary significantly, a just culture is hard to create. In a just culture gross negligence, wilful violations and destructive acts are not tolerated; yet this research found that bilingual foreman, due to their importance to the organisation would receive warnings rather than dismissals for such acts, which was inconsistent with others on the project.

Learning to communicate is essential for the transfer of H&S messages. Chan et al. (2016) suggested ethnic minority construction workers learnt the local language to improve safety performance; as communication barriers can restrict workers' engagement with raising hazards, reporting injuries and offering feedback, which have been linked to a reduction of accidents in a variety of studies (e.g. Carder and Ragan, 2003; Shearn, 2005). Thus, communication difficulties can have obvious implications for worker engagement and safety management (Hare et al., 2013). Worker engagement is regarded as increasingly important for safety; rather than relying on a more traditional top-down enforcement model. Sherratt et al. (2013) have highlighted a paradigm shift to personalisation, engagement, and participation around safety, making successful communication even more important. However, this approach may simply not be possible given the communication challenges illuminated here. If translating standard H&S messages and briefings to be cascaded down to the workforce is itself a challenge, and there is little shared understanding of what exactly is being translated, it is likely be all the more difficult to receive bottom-up communication from workers.

Members of this community had sought to overcome some of these communication barriers through incorporating non-verbal means of communication and technologies into their everyday work. In particular, hand signals and the body acted as a means to communicate simple instructions, whilst Google Translate and mobile phones were used to aid in interpreting written guides and on-site conversations. Mobile phones have an ambiguous status on construction sites. Though in some contexts they are banned (see, for example, Oswald & Turner, 2017), they can also often solve and support workplace processes to encourage safe working (Pink et al., 2010). Indeed, Pink et al. (2010) suggested that mobile phones need to be understood in relation to the huge variety of trade and work tasks in construction. For example, in Tutt et al.'s (2013a: 518) study, the use of the mobile phone was revealed as a key part of the coordination of the work at hand. In the current study, whilst mobile phones contributed to the development of a shared language amongst the community, they were found wanting. These challenges, coupled with the potential for mobile phones to help with the communication in multinational projects gives more reasoning for researchers to better understand their use in construction.

Conclusions

The large UK construction project in this study adopted the use of informal translators in order to communicate throughout the multinational workforce. As a cost-neutral management solution, bilingual employees were asked to act as informal translators without extra payment. The language skills of the translators, particularly at foreman level, varied from basic to fluent English. This caused challenges with communicating often complex safety critical messages amongst the workforce. There is room for introducing more formal and comprehensive language skills assessments to ensure that translators have a sufficient grasp of the English language ahead of being allocated this role on site. This finding strengthens the UK Health and Safety Executive’s recommendation that workers should go through ESOL training, or other language based qualifications. For successful language management, such a strategy would need to be properly planned and priced for, in a similar way to the more fundamental aspects of construction such as labor, equipment, and materials. While this may incur a small initial cost with better English language skills amongst employees, communication would become more successful and efficient. This should improve safety along with other project goals such as time, cost, and quality. The HSE recommended ESOL courses for workers are thus an important consideration, and deserve further attention in both practical and research terms.

The use of professional interpreters was not adopted in this case study. The communication challenges found in this work suggest that such interpreters are strongly worth considering as an investment for reasons of both safety and overall project efficiency. The HSE also recommend using a bilingual employee to act as an interpreter, or as a ‘buddy’ for inexperienced workers. In practice, this approach was limited to the one-in-six policy, as there were not enough bilingual employees for a buddy system with more interpreters. Further, even one-in-six was difficult to achieve in practice, as bilingual employees were frequently taken away from their jobs to translate elsewhere on site.

Providing written information in relevant languages was aided with technologies that could provide a basic translation for interpreters to work with. This saved valuable time, but this approach was not effective at all in the dynamic construction site environment, and even site office generated H&S document translation was restricted. Non-verbal methods were also found to be limited. For instance, when a safety issue arose, hand signals were perceived as being abrupt and confrontational. Furthermore, training videos and audio were in English, which would reduce the learning experience for non-English speakers. Interpreters refused to translate them, and so the training videos were not deemed worthwhile for non-English speaking workers. They refused because they were not being paid anything extra, and were busy with their everyday tasks. This suggests that for effective H&S communication, translation should be seen as part, or all, of the translator’s workload.

In summary, this research has provided deep insights and practical recommendations on an area of international construction project management that, despite calls from various researchers, has received little attention. In particular, this ethnographic investigation has demonstrated that their use is not a panacea to the problems of H&S management within a multi-lingual workforce, and indeed creates its own challenges, which included:

- Levels of English ability that varied greatly between translators, as there was no set standard;
- Some informal translators refused to translate as they were not receiving extra financial benefits, and it was not recognised as part of their workload;
- Informal translators were given favourable treatment in the disciplinary process as they were crucial to the operation of the site team, which created feelings of injustice amongst others.

A further contribution to the body of construction engineering and management knowledge was assessing the strategies that were adopted on this project. The findings are summarised below:

- The use of one 'informal' translator (worker/translator) for every six workers is impractical and causes communication breakdowns;
- Technologies, such as mobile phone apps, help translate documentation in draft form, which can then be refined by the translators; but has limited use for translating verbal communication on a dynamic construction site;
- Translating video safety training into different languages can be problematic, and therefore non-English speaking workers may have difficulty interpreting this safety information.

These ethnographic insights are valuable for industry in preparing for future multi-national projects, and can therefore be used to support the development of a more successful and effective approach for safety communication in such contexts. It is recommended that professional translators are provided to aid informal translators; that informal translators are trained; and that informal translators' duties are recognised as part of their role and renumerated accordingly. Future international construction projects should look to ensure effective H&S communication is adequately considered, and adopt more sophisticated strategies through which the value of successful H&S

communication is duly acknowledged and acted upon accordingly. As projects become more international, it is essential that good planning and necessary investments are made to consider the additional complexities this brings, in order to best manage and ensure the ongoing health and safety of their multinational workforce.

Data Availability Statement

Data generated or analyzed during the study are available from the corresponding author by request.

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