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Localisation Training in Spain and Beyond: Towards a Consensus on Content and Approach?

Abstract

Since localisation emerged in the 1980s as an activity linked to the software industry, its evolution has gone hand in hand with technological advances. In the globalised market of the 21st century, an ever-increasing range of digital products must be localised. While academic institutions are aware of how the increasing demand for localisation is affecting the translation industry, there is no consensus regarding what and how courses and modules on localisation should be taught. This article reports the findings of a survey-based study that adopted a descriptive-interpretive methodology to collect both quantitative and qualitative data from a group of 16 localisation trainers teaching on undergraduate translation programmes at Spanish universities. To contextualise and help with the focus of the survey, a literature review on localiser education was carried out. The results of both the survey and the literature review reinforce the findings of an earlier unpublished study by the same authors that localisation training is keeping pace with technological evolution, despite its scarce presence in translation studies curricula. In addition, respondents noted that one of their main challenges is finding authentic teaching materials and recommended closer collaboration between academia and the localisation industry.

Keywords

localisation; translator training; digital translation technologies; Spain; quantitative and qualitative research

1. Introduction

Since localisation – the process of adapting a product or content to a specific market – emerged in the 1980s in the software sector, its evolution has been closely related to that of digital technology. As both a local and global activity, its increasing significance has been recognised in the translation studies literature (Sprung 2000; O'Hagan/Ashworth 2002; Dunne 2006; Dunne/Dunne 2011; Jiménez-Crespo 2013; O'Hagan/Mangiron 2013; Bernal-Merino 2014; Dunne 2015; O'Hagan/Chandler 2016; Folaron 2020). Besides, recent studies have explored the relation between the needs of the language and localisation industry, and current training offers in specific geographical contexts, such as the MENA region (Al-Batineh/Bilali 2017), the US (Bilali 2018), or globally (Angelone et al. 2020), finding important disconnects between the industry and training institutions as a whole (Angelone et al. 2020: 8-9).

As mentioned in some of the previous studies, and despite increasing multilingual communication needs and a growing demand for localised products, the presence of localisation is still scarce in translation studies curricula. In the late 1990s, the Swiss-based Localisation Industry Standards Association (LISA) provided specialised localisation training in the form of materials and specific training programmes. Subsequently, in 1997 postgraduate localisation training was offered at the University of Limerick in Ireland. This development was followed by projects such as eCoLoRe, which was run from 2002 to 2005 by a consortium of European universities, prioritising the development of spe-

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cific teaching skills in localisation.[1] Very slowly, localisation started being included in translation studies curricula, as mentioned by Jiménez-Crespo (2013: ch. 7), O'Hagan/Mangiron (2013: ch. 6), and Bernal-Merino (2014: ch. 6), although with a "long road ahead" before being "fully assimilated by institutions of higher education" (Bernal-Merino 2014: 235). In fact, Roturier (2015: 11) reports on the feeling that translators have about the difficulty to "find good training on technical topics related to translation", Bilali (2018: 6) regrets the "lack of visibility of localization as a profession and as an academic discipline", and O'Brien/Rossetti (2020: 97) note that in some regions, localisation is completely overlooked in translation programmes.

Apart from the examples just mentioned, however, little research has focused on what and how to teach localisation to tertiary translation students. In this context, a previous study by the authors stands out for its focus on identifying localisation trainers' profiles and localisation methodology and content within the context of Spanish undergraduate translation programmes (Sánchez Ramos/Morado Vázquez/Torres-del-Rey 2018). The authors carried out a qualitative study that included only modules that explicitly include the term 'localisation' in their title. This helped us narrow our focus towards specific approaches to localisation as a differential interdisciplinary practice rather than just as another specialised linguistic domain for translation or as part of a general module on translation technology.

At around the same time, Bilali (2018) examined localisation training in the US and its relation with the industry needs in that country. Her study combined different data collection methods, including job offers descriptions, academic programmes, and course descriptions, as well as questionnaires and follow-up interviews with three groups of participants: employers, instructors, and practitioners. Although the analysis of the data appears to indicate some divergences between the different stakeholders in how they define and approach localisation, they seem to agree on fundamental aspects, such as the necessary collaboration between the training and the industry professionals. Bilali's study differs from ours in scope, geographical context and most of the data collection methods used. However, her findings, especially those obtained from a group of 22 localisation trainers ('instructors' in her own terms), are relevant to our current research and will be discussed, where appropriate, when presenting our results.

Recently, similar studies have investigated how translation technology competences and tools are taught across European master's translation programmes. For instance, Rothwell/Svoboda (2019) published the results of the 2017 European Master's in Translation (EMT) Translation Tools and Technologies Survey (the second in a series intended to take place every five years), from which they obtained information about which technological competences were being delivered in 55 postgraduate programmes, and how. The study also included a review of the literature on the evolving role of technology in both translator training and the industry. Subsequently, Ginovart Cid/Colominas Ventura (2020) analysed how machine translation (MT) post-editing was being taught, and they did it through a combination of data collection methods: questionnaires, follow-up interviews with educators, and analysis of syllabi. Another related study, carried out by Guarné I Ayuso (2020), assessed whether the technological competences taught in postgraduate translation programmes were in line with the needs of the translation industry and localisation market. Guarné I Ayuso performed a qualitative thematic analysis of 92 job offers and 232 technology-related course guides. Interestingly, amongst the guides, 25 belonged to localisation courses that covered mainly video game localisation, software localisation, localisation in general and web localisation. In contrast, accessibility and mobile application localisation were only mentioned once each (Guarné I Ayuso 2020: 120).

[1] The website for eCoLoRe (2002-2005) can still be accessed through the Wayback Machine at the Internet Archive (IA) website, which combines the URLs of the IA, including the date it captured the website, and of the queried web content, into one URL (https://web.archive.org/web/20110620053920/http://ecolore.leeds.ac.uk/xml/project/overview.xml?lang=en).

To the best of our knowledge, no previous studies have investigated how localisation is being taught by gathering data directly from a diverse group of localisation trainers in undergraduate translation programmes. Carreira/Arrés (2014) surveyed Spanish undergraduate translation programmes to determine the extent to which video game localisation was included, directly or indirectly, in training localisers, but hardly any mention of course components, pedagogies, or methodologies appears in their study.

We argue that localisation remains one of the most promising fields of specialisation within translation training, and that therefore it is vital to improve our understanding of what and how to teach in relation to localisation, as well as the challenges that localisation trainers face. The main objective of the research reported in this article was to provide specific information on undergraduate localisation training in a specific geographical context, in this case Spain, where existing modules seem to show considerable variability in translation undergraduate programmes. This, we hope, will serve as a starting point for other researchers in other locales. Our research aimed to answer the following three questions:

1. What is the profile of localisation trainers?
2. What are the course contents and teaching methodologies used?
3. What are the main needs and challenges that localisation trainers have to face?

The literature review below informed our study on localisation training. It allowed us to discover key topics, concerns, and developments, and to frame the discussion of the survey findings.

2. Literature review

Literature on localisation training remains scarce, despite localisation having been taught in academic programmes since the end of the 20th century. These programmes were mainly offered at the postgraduate level, such as the one mentioned above in Limerick and those run by several universities in North America. At the same time, the LISA Education Initiative Taskforce (LEIT) also contributed to the expansion of the teaching of localisation in other translation programmes at both undergraduate and postgraduate level around the world (Altanero 2000; Schäler 2007). Overall, there seems to be a lack of a unified, consistent methodology for training localisers; and our review of the literature uncovered three main reasons.

First, the conceptualisation of localisation in academia is often influenced by the specific products being localised. Video game localisation, for instance, can be considered as much a part of audiovisual translation as of software or multimedia localisation (Bernal-Merino 2014, sec. 6.2; O'Hagan/Mangiron 2013: 1; Mangiron 2018: 124-125). Both video game and web localisation are sometimes also regarded within the scope of transcreation, which emphasises cultural aspects, textual genres and types, multimodality, and creativity (O'Hagan/Mangiron 2013: 18, 107-110; Rike 2013; Lionbridge 2015: 63, 108). In contrast, software localisation is often assimilated with technical translation, at least in terms of translation and terminology strategies. Video game localisers are usually insulated from technical engineering tasks or programming preoccupations (as can be surmised from the traditional use of spreadsheets as their main translation tool) (O'Hagan/Mangiron 2013: 118, 184; Bernal-Merino 2014: 99, 115, 137; Mangiron 2018: 131-132). Meanwhile, website localisation typically involves at least a basic understanding of HTML (Diaz Fouces 2016), and software localisers have benefited from knowledge of certain aspects of object-oriented programming languages, resource files, and other advanced computer requirements (Dunne 2015; Roturier 2015).

Second, localisation is an interdisciplinary area of knowledge that straddles language, culture, computing, and business-related components (CNGL 2011). There are obvious difficulties in approaching localisation training holistically, attempting to cover these components thoroughly in a single course or module, while taking all the aforementioned localisation subdisciplines (web, video

game and software localisation) into account. Localisation is typically taught in one or, at most, two dedicated courses within general Translation undergraduate degree programmes, as is also the case in Spain, where localisation takes, on average, between three and six European credits (75 to 150 hours of student engagement, of which only 30% to 40% involve lectures or guided laboratory work) in one-semester courses. Trainers are therefore compelled to include only a selection of the available content and to pick one of the competing pedagogies for this cross-curricular subject, choices which are likely to be influenced by their previous experience and the resources they have at their disposal. Surely, certain key components of localisation may be introduced progressively or spread across other translation modules, either because they are also relevant for those modules or because some localisation aspects can help consolidate the idea of translation as more than just a matter of word substitution. However, our hypothesis is that the traits that are particularly specific to all localisation practices cannot be adequately presented or practised within such short modules.

Third, localisation has traditionally been taught in diverse training contexts: in the final years of undergraduate translation programmes, at postgraduate level, and in other professional and one-off situations (for example, short extracurricular or community outreach university courses, or specialised workshops at the workplace provided on demand). All of these may involve different prior knowledge and presuppositions, teaching methodologies and teacher profiles (Bernal-Merino 2014: chap. 6). Thus, where no other translation technology syllabi are offered (as can be the case in one-year-long general translation postgraduate programmes), localisation training may need to be offered as 'just' another way to enhance the digital literacy of novel translation students, including the identification and translation of digital textual or multimodal realisations, or the acquisition of basic computing skills or of transversal technological competences in CAT (Computer Assisted Translation) and MT (machine translation) tools; whereas, in the final year of undergraduate translation programmes or in specialised postgraduate translation technology programmes, localisation can be approached from more technical or engineering-oriented, research-oriented, transcreational, hands-on, or industrial-oriented angles, and with wider variations in terms of the products, services, and processes that can be covered, also depending on trainers' experiences and conceptualisations of the field (see Massey et al. 2019).

Our review of relevant literature also revealed three main periods in localisation training, with more or less shared concerns, scopes and visions within each period:

1. 1997-2006: *Introduction* of software and web localisation in translation and localisation programmes, mainly offered in practical approaches.
2. 2007-2016: *Consolidation* of varieties of localisation being taught, integration within a translation studies framework, predominance of task-based methodologies and theorisation of industrial practices and processes.
3. 2017-present: *Expansion* in methodologies and interdisciplinary influences.

Various key developments helped us to establish the above periodisation and to roughly mark period shifts: a) the increase in the variety of products included in academic conceptualisations of localisation and in university modules; b) the evolution of training objectives, methodologies, and competences, from narrower focuses to broader concerns; c) the onset of international training projects, international conferences, and the publication of key textbooks setting the tone for what and how localisation should be taught; and d) the evolution of translation technologies.

The first period (1997-2006) was defined by LEIT, the Localisation Research Centre in Limerick, Ireland, and by international projects such as eCoLoRe. This was a period of induction, the imposing influence of Esselink (2000), the predominance of software, computer-aided translation, and localisation tools (Bermúdez Bausela 2005; Schäler 2007), and, albeit to a lesser degree, websites.

A tension soon started to develop between the eminently practical approach that many localisation trainers embraced to better understand this new practice and the need to build a new theoretical apparatus and to integrate it within the disciplinary framework of translation studies (Hartley et al. 2005: 1). Authors such as Quirion (2000) and Austermühl (2006) highlighted the importance of critical, creative translation-related knowledge and skills regarding terminology, translation revision, and information research. Pym (2001, 2004) was also a close observer of the theoretical and pedagogical implications of localisation for translation studies. One of the main collections of the evolving definitions and theories is the edited volume by Pym/Perekrestenko/Barink (2006), which stemmed from online debates that took place in 2003. Contributors to this book anticipated the 'coming of age' of the discipline, with the Internet as a powerful modelling force for localisation activities, and an increasing emphasis on translational activities rather than just engineering or business-oriented processes. They also advocated academic approaches to localisation, the mutual support and the exchange of concepts and practices between localisation and translation, and in general, the importance of localisation in translation studies curricula.

Around 2006, localisation was indeed 'coming of age' (Folaron 2006). The transition between the first and the second period (2007-2016) took place with a proliferation of conferences and educational initiatives around translation technology and localisation, including the successors of eCoLoRe: eCoLoTrain and eCoLoMedia[2]. Websites and multimedia were stepping firmly into academic practices, conceptualisations, and discussions on localisation, and they opened the field to 'multidimensional' translation, thanks, among others, to the 2005-2007 MuTra Marie Curie Euroconferences[3].

Folaron (2006) highlighted three main localisation competences – management, technology, and language and culture – while Sandrini (2006) outlined six competences in the area of 'website translation' – translation technology, translation competence, international marketing, project management, web design, and technical skills – which can be deployed from a basic to an advanced level. Schäler (2007: 125-126), with a focus on software localisation, postulated the need to train for technical responsibilities but also for translator-oriented engineering roles, as well as project management, quality assurance, and translation/localisation tasks (see also Esselink 2002, 2006). He described those who perform the latter as follows:

> They have to analyze and assess the text; prepare electronic terminology databases; work with translation memory tools and machine translation applications; take screen shots; prepare automatic tables of content and indexes; and collaborate with the quality assurance engineers to fix linguistic bugs. In addition, they are expected to return their translations in a format that is identical with that of the original text. (Schäler 2007: 126)

The eCoLoMedia project raised video game localisation to prominence in the late 2000s (Secară et al. 2009; Mangiron 2018: 123-124). All the 'classical' ingredients for the teaching of localisation were now being established, almost becoming the 'standard' curriculum:

- a theoretical basis for localisation and internationalisation, including its history and industry practices, as well as different genres;
- knowledge and know-how about technical, cultural, and linguistic components that are typical in localisation practices for each product, posing constraints to translation (or re-constructive possibilities);
- file formats, standards and tools;

[2] The website for eCoLoTrain (2005-2007) is archived at https://web.archive.org/web/20130919184934/http://ecolotrain.uni-saarland.de/index.php?id=702&L=1. The website for eCoLoMedia (2007-2009) is archived at https://web.archive.org/web/20100712112043/http://ecolomedia.uni-saarland.de/.
[3] See https://www.euroconferences.info/proceedings/proceedings.php.

- project management (see Dunne/Dunne 2011, and particularly, Dunne 2011), including quality assurance and terminology management.

These were later confirmed by the main academic textbooks on web and video game localisation, published in the first half of the 2010s (Bernal-Merino 2014: chap. 6; Jiménez-Crespo 2013: chap. 7; O'Hagan/Mangiron 2013: chap. 6).

These textbooks also presented functionalism and social constructivism as the main teaching and learning approaches. The former emphasises source text and situational analyses of intratextual and extratextual factors (including culture), a graded approach to tasks and texts, and identifying difficulties and errors, while the latter incorporates authentic situations and projects, collaborative learning, and participating in expert tasks.

This period also saw the publication of a number of practical localisation handbooks and manuals. Roturier's (2015) was the most prominent in the area of software (or 'app', as he called it) localisation, although there were other important manuals that emerged from free and open-source software (FOSS) initiatives, such as those by the Mancomún Centre in Galicia, Spain (Benítez Baleato 2009) and the Translate.org.za non-profit organisation in South Africa (Wolff 2011). Best practices in video game localisation were also provided by Muñoz Sánchez (2007, 2017) and by the International Game Developers Association (IGDA) Localization Special Interest Group (Fung/Honeywood 2012). Finally, Lionbridge published a comprehensive guide (2015) on website localisation from a business and project management perspective.

This was also the period when the experience and resources of the open-source community were put at the disposal of the translation studies and localisation fields (Diaz Fouces/García González 2008). Localisation trainers began to benefit from having access to FOSS for their practical lessons, availing themselves of the GNU/Linux distribution with FOSS translation and localisation tools that the GETLT (Free Translation Technologies Study Group) group compiled and distributed in the late 2000s (García-González 2013). Localisation trainers can also use FOSS – and the resources that the open-source localisation communities freely provide[4] – to re-create real localisation experiences, as some authors proposed in the design of their courses (Cánovas/Samson 2011: 53-54; Morado Vázquez/Torres-del-Rey 2015: 8-9; Martín-Mor 2018). Access to authentic materials, as we will discuss later in the results section, seems to be one of the main challenges that localisation trainers face. These FOSS initiatives as well as the abovementioned eCoLo- projects, and the progressive offering of free academic licenses by major CAT tool developers, provided an excellent opportunity to tackle this issue.

In terms of teaching methods, the standard approaches during this second period were still mostly task-based, even though the integration of different competences, tasks, projects, and scenarios in more authentic settings had already been envisioned (Secară et al. 2009: 282).

It was only in what could be considered the beginning of the third period (2017-present) that other more collaborative, dialogical methods were put forward in the literature. For example, Mellinger's (2018: 201) methodology for computer-assisted translation pedagogy (including localisation) calls for collaborative "problem-based learning" that "relies on ill-defined, authentic problems", which need to be problematised to start with. This pedagogy encourages making the most of students' conceptual and procedural knowledge, in order to arrive, with the guidance of the trainer, at a "macro-level understanding of the problem" and, finally, at viable solutions (Mellinger 2018: 202). As another example, the use of projects, student group reflection, and action research is recommended by

[4] See the Galician Association of Free and Open Source Software Localisation (Proxecto Trasno: http://trasno.gal/recursos/) and the OPUS open parallel corpus (https://opus.nlpl.eu/) for a couple of examples of these freely available resources.

Sánchez Ramos (2019) to foster student collaboration and explore the possibilities, advantages, and disadvantages of different methods of localising mobile applications.

Another important aspect that has been emphasised recently is collaborating with the industry on real-life projects. Involving other experts and professionals is also called for (Bilali 2018: 189; Granell 2011: 188-189; Gutiérrez-Artacho et al. 2019; Muegge 2018), and, if possible, approaching localiser training as collaborative project management (Esqueda 2020; Kudła 2017), situated and embodied learning (Calvo 2015; Risku 2010), emergent expertise (Kiraly 2013; Kenny 2020: 504), or co-emergent experiential learning and transdisciplinary action-research (Massey 2021, 2019).

This recent period in the localiser training literature is based on the integration of new skills and job profiles, not only because localisation departments now also deal with "customer support databases, training and human resource portals, social media, search engine optimization and digital marketing content" (van der Meer 2020: 288), but because localisation is constantly being redefined in line with new practices (or labels) and tools, such as crowdsourcing, transcreation, multimedia and audio visual translation, and neural MT (O'Brien/Rossetti 2020). Localisers are also increasingly seen as responsible for the accessibility of their transformative work (Rodríguez Vázquez 2013; Rodríguez Vázquez/O'Brien 2017), and accessibility is also now considered an important asset for localisers (Torres-del-Rey/Rodríguez Vázquez 2016; Torres-del-Rey/Rodríguez Vázquez/Sánchez Ramos 2020).

O'Brien/Rossetti (2020) argued that their findings "provide empirical support for an inclusive approach to localisation training, whereby students acquire technical knowledge and skills, along with mastery of the language, cultural awareness, and business acumen, among other skills". This is also the focus of the "social, object-driven, semiotic-communicative approach" put forth by Torres-del-Rey (2019), which, as O'Brien/Rossetti (2020: 113) summarise, builds on "knowledge from other disciplines (e.g., human-computer interaction), and regards the digital product as a communication-rich artefact with technical, semiotic, and linguistic components" that must be fully manipulated and acted upon by students for effective learning. Torres-del-Rey's (2019: 253) "social, object-driven" approach would also help localisers to

> communicate with designers, programmers, and globalizers, using their professional language (games) […] convincing designers, developers and localization project managers both to include more contextual information […] and to rely on localizers' role as special or expert intercultural users, who can suggest internationalization and accessibility improvements that may prove beneficial for the product as a whole, in the "original" and the target locales.

O'Brien/Rossetti (2020: 110-111) suggest expanding the 2017 competences framework by the EMT Network, based around "language and culture, translation, technology, service provision, and personal and interpersonal," to include new abilities linked to the technologisation of the profession and to the various roles that translators will have to play in the future. Torres-del-Rey advocates a unifying analytical approach – a dynamic prototype for action – for teaching localisable products and attendant transformational processes dependent on the various profiles, responsibilities, types of products and their structural parts, as well as the specific phases and processes of the internationalisation and localisation cycle (Torres-del-Rey 2019: 246-252).

However, a less technical approach may be more akin to video game localisation training, which has produced the largest number of related pedagogical studies in recent years (e.g., Esqueda 2020; Mangiron 2021; Odacıoğlu et al. 2016; Plaza-Lara/Grau Lacal 2018). The previously mentioned classical ingredients established by eCoLoMedia and endorsed and refined by Bernal-Merino (2014: 235-238) and O'Hagan/Mangiron (2013: 257-264) remain their standard syllabus: as mentioned earlier, these proposals advocate familiarity with genres and video game culture, theoretical and intercultural awareness, knowledge of processes (including terminology management, quality assurance and testing), industry requirements and agents, assets and file formats, mastering commonly used

tools, creativity and strategic competence to deal with specific challenges and constraints, including technical elements surrounding coding and embedded in text messages by computer languages (Mangiron 2021: 39-44).

As demonstrated by the above review of the literature, localisation is a vast, complex field, involving various multimodal interactive digital products, job profiles and task descriptions and production areas. The field ranges from technical to product- and function-oriented roles, including linguistic and creative roles, and from business-, process- or management-oriented tasks to areas such as usability, accessibility, terminological appropriateness, and cultural suitability. It is therefore no wonder that some research deals with only one type of product, or at least not all[5]. Some publications on localiser training tackle essentially linguistic, cultural, transcreational, or more classical translation aspects (Gutiérrez-Artacho et al. 2019; Jiménez-Crespo/Tercedor 2011; Morón/Calvo 2018; Plaza-Lara/Grau Lacal 2018), while others take those for granted and focus fundamentally on technical procedures (Morado Vázquez/Torres-del-Rey 2015; Roturier 2015; Torres-del-Rey 2019). Other research is mainly concerned with project management roles and scenarios (Esqueda 2020; Gutiérrez-Artacho et al. 2019). The pedagogical approach can be competence-based, task-oriented or centred on a single complex project, during which students are guided by trainers to develop expertise through exposure to ill-defined problems and authentic situations which require responsibilities and goals to be negotiated. What most, if not all, approaches have in common are two core ingredients: learning by doing and handling products, texts, processes, and roles.

3. Method

3.1 Respondents

The primary aim of the study reported here was to improve understanding of the teaching of localisation in undergraduate courses in Spain. In order to achieve this aim, a survey was composed to collect both quantitative and qualitative data on the curricula and methodology of the relevant courses, the profile of their trainers, and the challenges they face. The survey was developed using the findings of the literature review on localisation training presented in the previous section. A descriptive exploratory methodology (Creswell 2013) was used to analyse the results of the survey. Sixteen localisation trainers participated in our study, although one of the respondents provided answers only to the first section of the questionnaire (the profile block, questions 1-8).

Prior to the design and distribution of the survey and the selection of respondents, the website of the Association of Spanish State Universities with Official Translation and Interpreting Degrees (AUnETI)[6] was used to access the training programmes of the different translation and interpreting undergraduate degrees in Spain and to search for localisation-related content in the courses taught. Two main kinds of courses were observed: (1) those that explicitly included the term ‘localisation’ and (2) those that did not explicitly include the term but whose content was related to localisation. While the survey used in the 2018 study (Sánchez Ramos/Morado Vázquez/Torres-del-Rey 2018) only included subjects belonging to group (1), this second study also included courses that indirectly included localisation (e.g., Multimedia Translation).

[5] Online courses and MOOC are examples of this. Google’s 2017 Localisation Essentials course on Udacity dealt with web content, and web, desktop, and mobile application user interfaces. Platforms like Udemy offer online localisation courses on video games exclusively, although Udemy also features courses on website localisation and mobile app localisation for translators. The Erasmus+ DigiLing project offers a Localisation Tools and Workflow course at the University of Leeds. This course does not include any material on video games, and neither does the University of Washington’s 2021 courses on internationalisation and localisation on EdX.

[6] See http://auneti.org/formacion/grados.

The survey was sent to the selected universities' localisation trainers (or a representative of these when localisation was taught by more than one lecturer), who were informed of the research and whose permission was obtained for its dissemination (Table 1).

University	Course	Year	Subject type	Credits (ECTS)
Universidad Alfonso X	Scientific-Technical Translation and Localisation	4th	Compulsory	4
Universidad Autónoma de Madrid	Software Localisation and Web Programming	4th	Optional	6
Universidad Complutense de Madrid	Software and Web Localisation	4th	Optional	6
Universidad de Alcalá	Localisation	3rd/4th	Optional	8
Universidad de Salamanca	Localisation I and Localisation II	3rd/4th	Optional	6 and 3
Universidad de Valladolid	Localisation	3rd	Optional	3
Universidad Europea de Madrid	Software Localisation	3rd	Compulsory	6
Universidad Europea de Valencia	Software Localisation	3rd	Compulsory	6
Universidad Europea del Atlántico	Audiovisual Translation and Localisation	4th	Optional	6
Universidad Internacional de Valencia	Software and Web Localisation	4th	Compulsory	6
Universidad Pablo de Olavide	Software and Web Translation	3rd	Compulsory	6
Universidad Pompeu i Fabra	Localisation	4th	Optional	4
Universidad Pontificia de Comillas	Localisation	3rd/4th	Optional	3
Universitat Autónoma de Barcelona	Audiovisual Translation and Localisation	4th	Optional	6
Universidad de Córdoba	Multimedia Translation	4th	Optional	6
Universidad de Granada	Multimedia Translation	4th	Optional	6

Table 1. Universities and course included in the study

3.2 Survey design

The survey was sent out through the EncuestaFacil platform[7], which supports a clear and simple design and a wide choice of different types of questions. This platform was available during the academic year 2020-2021, and it was closed in April 2021. As some studies have noticed, surveys can be 'particularly vulnerable' due to the fact they can be easily "created, circulated and analyzed" (Mellinger/Hanson 2021). Nevertheless, our survey was distributed among a specific group of participants who were carefully selected (localisation trainers) in order to obtain valid results. The survey, which had been validated by trainers in the field of translation technology to avoid ambiguities or technical errors (Kronick/Presser 2010), included 20 questions distributed in three sections: (1) information on the localisation trainer profiles; (2) information on localisation content, including methodological aspects (e.g., learning activities and evaluation); and (3) reflections in the form of comments and suggestions (see below). It was administered in English, and it can be consulted in Appendix 1.

Question formats varied from single-answer questions to multiple-choice and open questions. The two former question modalities presented a Likert-type responding format (where they could be scored between 1 and 5) as recommended for qualitative research (Edley/Litoselitti 2018; Krosnick/Presser 2010; see also Mellinger/Hanson 2021). The structure of some questions followed the

[7] See www.encuestafacil.com

logic of exclusion (Zaretzkaya et al. 2018), and therefore they were adjusted to responses previously given by respondents: for example, respondents indicating that they had not worked as professional translators would not be presented the following question enquiring about the number of years of experience. Responses to open questions and free comments were analysed using thematic analysis, with content grouped according to themes (Bryman 2012).

The content of the three survey sections was as follows:

- Section 1: Information on localisation trainer profiles. Eight questions seeking demographic information from the respondents covering age, gender, nationality, university where they taught localisation, and information on their experience as translators (if any) and as users of different information and technology (IT) tools.
- Section 2: Information on localisation content and methodology. Nine questions focused on the content of the localisation course, including on the selection of teaching content, resources, type of activities, theory-practice balance, and evaluation methods, and concluding with an open question on the main challenges faced in the teaching of localisation.
- Section 3: Comments and suggestions. Three open questions aimed at determining the respondents' opinions on improvements needed in localisation teaching, localisation evaluation, and teaching resources for localisation.

4. Findings

4.1 Localisation trainer profiles (questions 1-8)

As can be observed in Table 2, just over two thirds of the 16 localisation trainers in this study were over 40 years old, and a quarter were under 30. Most of the trainers were women (63%, 10 out of 16) and just over half had a consolidated background in localisation (Table 3), with expertise in areas such as technical translation, scientific translation, or audiovisual translation (Figure 1).

Age of respondents	%
21-30	25%
31-40	6%
41-50	56%
51-60	13%

Table 2. Age of respondents

Years of experience	%
Less than 1	6%
1-3	31%
4-6	6%
7-9	0%
10 or more	56%

Table 3. Years of experience as localisation trainer

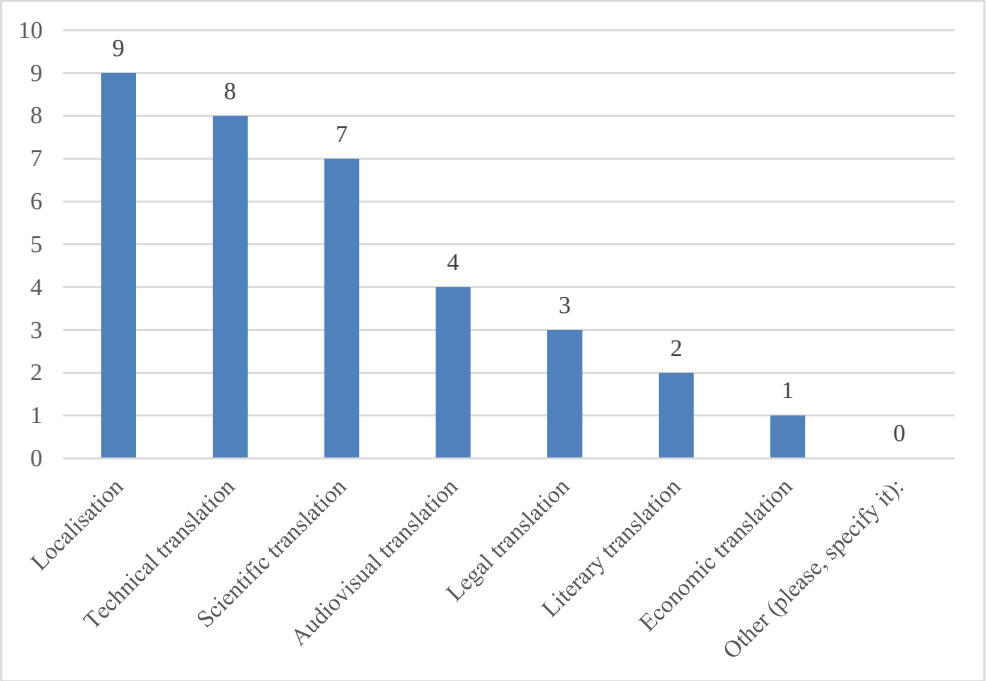

Figure 1. Localisation trainers' specialisations

The majority of the respondents declared having had professional translator experience (88%, 14 out of 16), and, as can be observed in Table 4, half of them had 10 or more years of experience in the professional translator sector. As shown in Table 5, their professional roles varied greatly and included freelance translation, in-house translation, and 'other' roles including management, consultancy, and educational jobs. Those results point to a close relationship between the industry and university in the specific context of localisation, a field that requires responsiveness to the real world, as insisted on by the translation industry itself (Arevalillo Doval 2020). They also reflect the more recent approaches to localisation training, as mentioned in the previous section (Granell 2011: 188-189; Gutiérrez-Artacho et al. 2019; Muegge 2018).

Years of experience	%
Less than 1	0%
1-3	21%
4-6	21%
7-9	7%
10 or more	50%

Table 4. Years of experience as professional translator

Professional role	%
Freelance/self-employed translator	77%
Freelance translator working in a translation company/agency	23%
Translator employed by a translation company/agency	15%
Translator working for a public institution/body (local or national)	0%
Translator working for an international institution (EU, UN, etc.)	0%
Project manager of a translation agency/company	0%
Reviewer	0%
Other	31%

Table 5. Localisation trainer profile

The final profile-related question (number 8) aimed to establish how familiar localisation trainers were with different translation tools and software. Most of the respondents were familiar with (and even considered themselves expert in) translation technologies such as translation memory management, specific localisation software, or MT software. Tools that respondents were less familiar with included integrated development environments and editing tools. It is worth noting the high percentage (81%) of respondents who scored their familiarity with MT software with a 5 (compared to 61% in the 2018 study). This appears to be a clear consequence of the increase in automation in translation, and it may point at a natural inclination of localiser trainers towards a continuous updating of their syllabi on the basis of technological advances. This finding also aligns with training approaches that advocate for more professionally oriented translation programmes, such as the EMT (e.g., Rothwell/Svoboda 2019).

On average, respondents were experienced in their role, had extensive teaching and professional expertise in localisation, and were mainly specialists in localisation, scientific translation, technical translation, or audiovisual translation. Furthermore, as shown by their level of familiarity with different translation tools, their profile was consistent with the evolution of technology (e.g., the progress of MT).

4.2 Information on content and methodology (questions 9-16)

The specific objective of this question block was to analyse, and to compare with the approaches to the teaching of localisation identified in the literature review, what was taught, how it was delivered, as well as the challenges the trainers faced. As mentioned earlier, fifteen of the sixteen respondents provided answers to this block of questions as well as to the following one.

Thematic analysis revealed a range of teaching contexts and localisation products (question 9). The respondents prioritised the teaching of web and software localisation as the main content taught in the localisation classroom, followed by videogame localisation, which is gaining momentum. Other contents were related to professional aspects, localisation project management, technical aspects of localisation, MT, or collaborative localisation environments. These results are in line with recent localisation training research, where video game localisation seems to be a growing area of interest (Esqueda 2020; Mangiron 2021). Besides, these findings are partially consistent with those of Bilali (2018: 105-106), whose more than half of the respondents (localisation trainers) were involved in software and web localisation courses (66%). However, 'game' localisation in her study was only taught by 4.76% of the respondents. Course content on accessibility, quality assurance, multilingual search engine optimisation, and transcreation was also considered important, while theoretical content related to linguistic aspects (e.g., translation techniques) and the teaching of computer-assisted translation tools were considered to be less important, probably because it is adequately covered elsewhere in the curriculum. These findings are similar to those of Sánchez Ramos/Morado Vázquez/Torres-del-Rey (2018), indicating how the teaching of localisation goes hand in hand with developments in technology and with current market needs. For instance, although issues such as transcreation and MT featured in the 2018 study, they did so to a lesser degree.

Responses to questions 10 and 11 reflected the increasing importance of digital technologies relating to accessibility and collaborative environments in localisation. There was a significant increase in the number of respondents who included content related to accessibility, such as Web Content Accessibility Guidelines 2.1, automatic validation, and plain language (67% in the current study vs 40% in the 2018 study). With regard to collaborative platforms, the data were very similar to those of the 2018 study. These aspects were not covered in Bilali's study with localisation trainers (2018).

Since localisation is a highly practical subject, we considered it important to determine the theory-practice balance adopted by the respondents (question 12). As can be observed in figure 2, more importance was attached to practical issues than to theoretical content, a result very much in line with the responses to question 9. This practical orientation in localisation training was also reported by

Bilali (2018: 108-109) where 70% or her respondents stated that their courses were practice-oriented, over 25% theory-oriented and 5% research oriented.

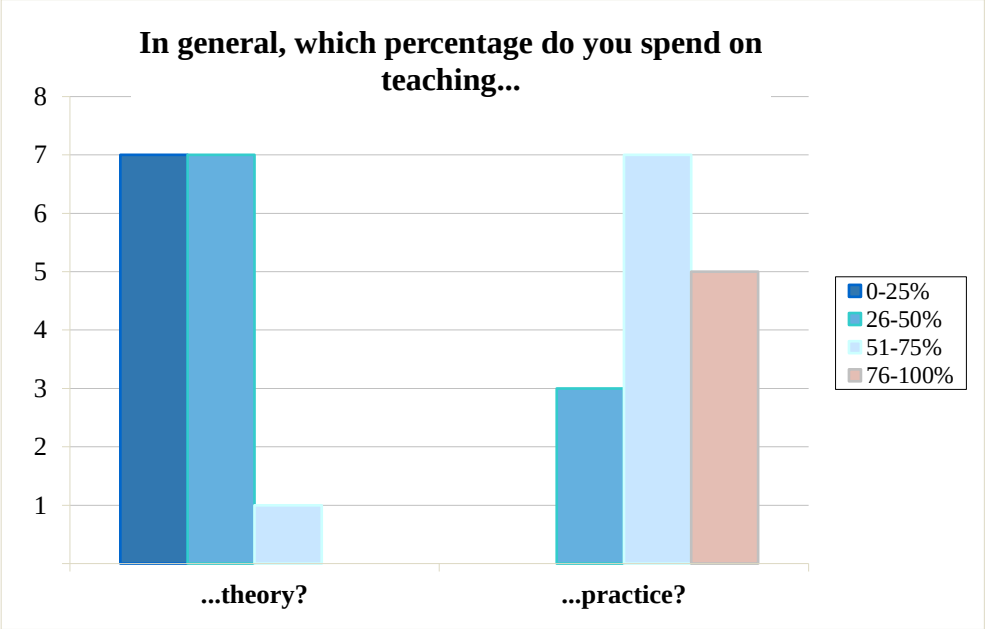

Figure 2. Theory-practice balance

Methodological issues regarding teaching, learning and assessment, addressed by questions 13 and 14, also need to be considered when planning a course. As expected for a country within the European Higher Education Area (EHEA), most respondents indicated that they used formative evaluation (80%) as this is the type of evaluation preferred under this educational system, which is particularly appropriate for localisation content due to its hands-on content. However, a significant proportion of respondents (60%) also used the more traditional summative evaluation, while diagnostic assessment was also used (33%). Whereas all these types of assessment are likely to be needed in the academic context, it is interesting to see that, as suggested by Kiraly (2000: 132-134) and Morado Vázquez/Torres-del-Rey (2015: 11), the syllabus and teaching approach may be adapted to students' prior knowledge and competences, and that summative assessment is not the main approach to evaluation, which is clearly insufficient in practice-oriented, problem- and project-based learning activities such as localisation. Instead, the integration of more formative evaluation, including self and collaborative assessments, seem to be more appropriate (see Mellinger 2018: 204-205).

Figure 3 shows that, as in the 2018 study, respondents used a diverse selection of teaching and learning methods, including formative assessment instruments. Project-based tasks stood out (93% of the respondents claimed to use them), followed by presentations (73%) or discussions (67%), and problem solving (67%), all of which are associated with the socio-constructivist approach (Kiraly 2000), as well as with collaborative methodologies (Mellinger 2018), situated learning (Risku 2010, Calvo 2015), and emergent expertise (Kiraly, 2013). This finding corroborates other studies exploring the teaching of technological content in translation classrooms, with the project-based approach proposed as most appropriate for this context (Mitchell-Schuitevoerder 2020), and the 'turn' to more co-emergent, experiential, and action-research teaching scenarios at the beginning of the third period in localiser training mentioned in the literature review section (Torres-del-Rey 2019, Massey 2021, 2019). Our findings are also consistent with the results of Bilali (2018: 110), in which at least the majority of the respondents categorised discussions, lectures, case studies, individual projects, and simulation exercises as important instruction types.

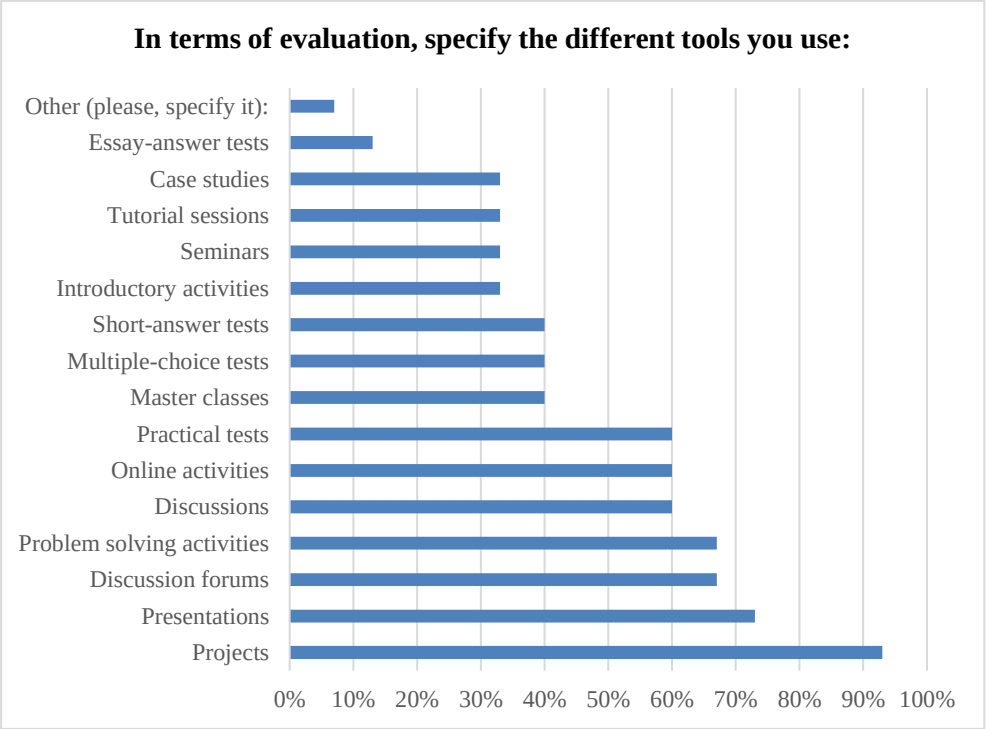

Figure 3. Teaching and learning instruments for taught content

Regarding resources (question 15), trainers clearly attached great importance to authentic material reflecting the type of content (websites, mobile applications, or videogames) and also to work-focused experience in the form of seminars and workshops. Academic articles and ad hoc materials also tended to be used as key teaching resources, while manuals and books came at the end of the list. As the 2018 study found, the importance of the localisation industry's contribution to the classroom in the form of specialised workshops was again underlined (question 16).

Finally, respondents were asked to comment on the main challenges they faced in teaching localisation in this section (question 17). As in the 2018 study, a key challenge identified was the lack of basic technological competence and technical knowledge of many students, which undoubtedly creates problems when designing the course and planning for learning progression. This critical challenge in localisation training was also reported in Bilali's study, who mentioned "the disparity of students' background and translation knowledge base, different skill levels, and limited computer literacy" (2018: 116-117). It is also important to note that, in passing, three respondents considered the teaching of localisation (in which they all had three or fewer years' experience) a challenge due to their own lack of knowledge of technical aspects, limited competence, or little acquaintance with the field.

4.3 Localisation training issues (questions 18-20)

The final section of the survey consisted of open questions aimed at encouraging respondents to freely express their ideas regarding aspects they believed could be improved in the main pedagogical areas of localisation: teaching, evaluation, and resources. Answers to this question block helped us to unveil more localisation training challenges and, consequently, they complement the results from question 17 presented in the previous section.

With respect to the teaching of localisation (question 18), respondents were very aware that localisation as a content area needs to be coordinated and integrated with other areas, especially those related to the development and acquisition of technological skills, which, as advocated for example

by Mellinger (2017) for machine translation and related technological processes, could be done across the curriculum rather than in standalone modules. This cross-curricular coordination is therefore considered key to laying the foundations for effective learning of localisation content. Besides, respondents stated that group activities were essential, given the reality of cooperation in localisation projects – in line with project-based evaluation (Mellinger 2018; Torres-del-Rey 2019). Since localisation is a practical subject, the respondents were unanimous in demanding the allocation of more hours and credits to the subject, as they strongly believed that the current amounts of both to be too low. Other comments supported the introduction of more technological content (e.g., localisation as a subject in the first and second years of the undergraduate degree). There were also comments related to the difficulty of finding suitable teaching materials, with some respondents stating that they needed to be more widely available[8]. These results are in agreement with those obtained by Bilali (2018: 117), whose respondents identified the difficulty of accessing authentic materials as one of the main localisation training challenges. To overcome this obstacle, they proposed the creation of their own materials and to establish collaborations with the industry.

As for assessment (question 19 "Please, provide any other comment you consider would improve localisation assessment"), the concern that localisation evaluation requires a careful approach was noted in some of the comments, which emphasised the need for authentic materials so that lecturers could implement evaluations that better reflected the professional world of localisation, which would also be a way of 'naturally' limiting the scope of content, problems, and tools being used, and of focussing on the analytical selection of strategies and solutions, rather than trying to encompass everything that there is (Mellinger 2018: 199). Some of the answers were: "Localisation projects from real customers" or "Contact with localisation companies would help provide a more realistic view of localisation projects".

This aspect was also included in some of respondents' answers to open question 20 on resources, where they also complained that the main translation tools and localisation software should be free of charge, reflecting a diverse landscape where some developers do offer free educational licenses, but others do not. This again represented a call for enhanced connection between university and industry, as advocated by Massey (2019, 2021).

5. Further Discussion and Conclusion

Despite the importance of effective and efficient localisation in the globalised society of the 21st century, there are no systematic studies on the teaching of localisation in the international context, and there is very limited research on the subject in the context of the study in Spain. As a step towards rectifying this situation, we conducted a survey-based study to investigate three essential questions: the profile of the localisation trainers, the content and methodologies used in their teaching, and the needs and challenges faced by them.

Our findings show that most localisation trainers in our study had extensive experience in the area of localisation, as well as in related technologies such as MT. Along with traditional content such as software localisation or web localisation, they are also gradually incorporating video game localisation and mobile applications, in addition to web accessibility and collaborative platforms as a response to the evolving needs of today's digital society.

However, we observed that localisation training is still not standardised in the Spanish context, as we did not find a consensus in terms of approach, methodology, contents, and, to a lower degree, types of products. This is not necessarily a negative aspect, for, as we have seen in the analysis of the review of the literature, localisation training can be influenced by several variables. The first

[8] We note here the recent study carried out by the ERASMUS+ ETransFair project (https://etransfair.eu/), which promoted university-industry relationships, and provided different training modules for teachers, including content on localisation.

variable is the specific products being localised. There are introductory localisation courses that only include traditional website or software products, or more specialised ones focusing on the localisation of specific digital products such as videogames or mobile applications. This can affect the approach, methodology, and specific contents being learnt. A second variable is the time constraints of the courses, which in our context mainly ranged from three to six European credits. It might be neither realistic nor reasonable to cover the whole field of localisation in such a limited teaching period, and consequently, decisions must be made to select the most relevant contents, or those for which materials can be accessed, or effective teaching methods are available. The third variable has to do with the various approaches as well as theoretical and didactic perspectives under which translation and localisation can be taught (technical, textual, cultural, business-oriented, and so on). The last variable is trainer profiles – their previous professional and teaching experiences – and the resources at their disposal might also influence the content selection and the teaching methodology used.

With regard to the different methodological proposals in the literature on localiser training, the respondents seemed to be incorporating state-of-the-art methods, mainly within constructivist approaches, including project-based or task-based methodologies, as well as problem-based approaches, simulations of professional settings, and even joint projects with industrial partners. The presence of industry professionals was also common in the classroom, as some of the trainers are active localisation professionals themselves. Besides, the organisation of seminars and workshops to show students how the localisation industry works was also reported.

Respondents also called attention to the difficulties they face in their work. Students often began the localisation course insufficiently equipped in the use of digital translation technologies, and respondents called for greater coordination among staff in incorporating technological content across the undergraduate programme. This challenge could be addressed at least from two different angles. Firstly, translation-related technology courses could be integrated earlier in undergraduate translation programmes. The skills and competences acquired in those courses could help students reach a minimum level of competence necessary to tackle more specialised localisation courses later on in the translation programme. Similar approaches were suggested by Bilali (2018: 117) where respondents "believe[d] that devoting more class time to CAT [Computer Assisted Translation] tools use or moving the CAT tools module to more advanced stages of the training could help". In the same vein, when teaching localisation data exchange standards, Morado Vázquez/Torres-del-Rey (2015: 10-11) recommended to a) introduce underlying general technical topics[9] prior to the main course content, and to b) include this specialised course at the end of the programme or semester, so students would, by then, have acquired the necessary technical knowledge to better digest the course contents. This could help establish a gradual sequence of competences within the syllabus. Secondly, diagnostic questionnaires at the beginning of the course could be delivered to the students to obtain specific information about their prior knowledge; this information could be used to reinforce some of the course content, in order to fill potential knowledge gaps. Adapting the course contents to the students' needs was also one of the recommendations provided by Morado Vázquez/Torres-del-Rey (2015: 11), as well as – more generally – by Kiraly (2000: 132-134).

In terms of content, respondents reported having difficulty in finding material for the preparation of their classes. As stated in the literature review section, open-source materials could be used to overcome this obstacle. For example, in the case of videogames, Morado Vázquez/Torres-del-Rey (2015: 8-9) stated how they modified and introduced a popular videogame (SuperTuxKart[10]) in their course to recreate a localisation bug testing activity. Besides, open-source localisation volunteer communities could be a source of valuable resources, and they usually gather learning materials to help the integration of newcomers. Collaboration with the industry, as Bilali (2018: 117) suggests, could

[9] In this case, it was an introduction to XML that Morado Vázquez/Torres-del-Rey (2015) identified as necessary to better move on to more specialised content on data exchange standards such as TMX or XLIFF.
[10] See https://supertuxkart.net/.

also be beneficial in accessing authentic materials. Other publicly available initiatives could also be exploited to obtain authentic material. The authors have already integrated the following material in their courses: TBX authentic files can be downloaded from the IATE (Interactive Terminology for Europe) portal[11] or the Microsoft Language Portal[12], official style guidelines in several languages can be downloaded from the Microsoft Language Portal, or XLIFF files can be downloaded from the XLIFF Technical Committee repository[13]. All the above-mentioned material is provided by different organisations and was not originally created for teaching purposes. It would undoubtedly be beneficial for the global localisation training community to have a common space where they could share their teaching resources and experiences. Finally, the issue of effective evaluation was also considered to be important, particularly as regards remaining in touch with industrial processes and standards of quality. Here, more collaboration between the localisation industry and university is required to solve this difficulty.

Although the study was geographically delimited, most of its results are consistent with those of Bilali (2018). Localisation training seems to be approached similarly in terms of teaching content and instruments used in both countries. Besides, trainers appear to be facing the same key challenges: disparity of students' prior technical knowledge, as well as lack of authentic teaching materials. Further investigations in other geographical contexts could explore whether localisation training is addressed similarly, in terms of content, teaching or evaluation methods, as well as to examine the profile of the training professionals and the challenges they might be facing elsewhere. This could broaden the perspective of the challenges that localisation training faces globally, including locale-based specificities, as well as promote a community of trainers to share methods, content, solutions, resources, and even international and interinstitutional projects.

This study's main limitation is its restricted sample size, and as such, its findings cannot be generalised to other educational contexts. To develop comprehensive insight of localisation training, future studies could complement (or compare) our results with the inclusion of other localisation training opportunities: postgraduate courses as well as specialised seminars, workshops, or summer school initiatives[14]. Other data generation methods could be employed, such as the examination of current localisation job offers in Spain, following the examples of Al-Batineh/Bilali (2017) or Bilali (2018), or the inclusion of the views of localisation professionals and companies, following the examples of Rodríguez Vázquez/O'Brien (2017), Bilali (2018) or O'Brien/Rossetti (2020). Nevertheless, this preliminary study has provided a snapshot of localisation training in Spain's undergraduate translation programmes, one which we hope will act as a starting point for subsequent research exploring localisation training both in Spain and beyond.

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[11] See https://iate.europa.eu/download-iate for more information.
[12] See https://www.microsoft.com/en-us/language/Terminology.
[13] See https://github.com/oasis-tcs/xliff-xliff-22.
[14] See, for example, the Tradumàtica Summer School on Translation Technologies that includes several localisation-related courses: https://pagines.uab.cat/tradumaticasummerschool/.

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Appendix 1. Survey

LOCALISATION TRAINING SURVEY

SECTION 1. PROFILE

1. Age
2. Gender
3. Nationality
4. University where you teach localisation
5. Indicate the number of years you have been teaching localisation at higher education level:

6. Indicate your field(s) of specialisation:

Localisation
Audiovisual translation
Scientific translation
Technical translation
Legal translation
Economic translation
Literary translation
Other (please specify):

7. Have you ever worked as a professional translator? If yes:

Indicate the years of experience working as a professional translator:

Choose the most appropriate sentences that define your profile:

a) Freelance/self-employed translator
b) Freelance translator working in a translation company/agency
c) Translator employed by a translation company/agency
d) Translator working for a public institution/body (local or national)
e) Translator working for an international institution (EU, UN, etc.)
f) Project manager of a translation agency/company
g) Reviewer

h) Other (please specify):

8. How would you rate your level of usage of the following tools?

I have never used it (1)
I have seldom used it (2)
I am not a very advanced user (3)
I am an advanced user (4)
I am a proficient user (5)

Translation memory software
Localisation software
Translation project management software
Machine translation software
Desktop publishing software
Image editing software
Integrated development environments
Advanced text editors
Communication and management tools (FTP clients, word count tools, database management systems)
Corpus management software

SECTION 2. TEACHING CONTENT

9. Rate in order of importance the main contents you teach[15]:
The least important (1) <-----> The most important (5)

10. Considering web accessibility as a way of making people with disabilities able to perceive, understand, navigate, and interact with the Web, and able to contribute to the Web... (see https://www.w3.org/WAI/intro/accessibility.php) Do you include any contents related to web accessibility? If yes,

Briefly comment about the contents related to web accessibility you teach:

11. Do you include any content related to crowdsourcing and online collaborative localisation projects? If yes, Brief comment about the contents related to crowdsourcing and online collaborative localisation projects you teach:

12. In general, which percentage do you spend on teaching... [16]

Theory? 0-25% 26-50% 51-75% 76-100%
Practice? 0-25% 26-50% 51-75% 76-100%

13. Which type of assessment do you use?

a) Formative assessment (mainly contributes to the learners' learning through providing feedback for each activity instead of giving a final mark)
b) Summative assessment (shows the learner's success in meeting the assessment criteria through different marks and a final mark is given)
c) Diagnostic assessment (assesses learners' previous knowledge and the initial difficulties they might have; often used before teaching or when a problem arises)

[15] Question 9 was an open-ended question. Results were analysed by using the thematic analysis approach (see page 18).
[16] Respondents could answer freely to these two options; the tool did not force them to answer options that would sum 100 in total.

14. In terms of teaching methods, including formative assessment, specify the different tools you use[17]:

Introductory activities
Master classes
Projects
Seminars
Presentations
Discussions
Tutorial sessions
Online activities
Case studies
Discussion forums
Problem solving activities
Multiple-choice tests
Short-answer tests
Essay-answer tests
Practical tests
Other (please specify):

15. In terms of teaching material, rank the different resources you use:

I never use them (1)
I seldom use them (2)
I sometimes use them (3)
I often use them (4)
I mostly use them (5)

Books
Academic articles
Professional experience
Authentic material (i.e., websites, mobile apps, images)
Tailored made material (i.e., websites, mobile apps, images)

[17] Respondents could select those tools they use as teaching methods.

16. Do you organise other types of activities (seminars, workshops...) to show your students how the localisation market works? If yes, give an example.

17. Specify the main challenges you find when teaching localisation:

SECTION 3. SUGGESTIONS TO IMPROVE LOCALISATION TRAINING

18. Please provide any other comments on how to improve localisation teaching:

19. Please provide any other comments on how to improve localisation assessment:

20. Please provide any other comments you consider relevant in terms of localisation teaching resources: