

Standardisation of Braille in the EU and other European Countries

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Abstract

Understanding the importance of the standardisation process of braille and braille related issues is important for experts working with persons with visual impairment. Standardisation documents can help in preparation and development of braille, and can be accepted with consensus or with acceptable level of consensus of the expert group. This paper uses qualitative and quantitative methods and presents results of the analysis of standardisation of braille in the EU in 32 European states. It determines the state of art (standardisation) in the states of Europe (member states EU (n1=27) and member state candidates (n2=5). The aim of this paper is to determine the state of standardisation and acceptance of relevant normative documents *EN 15823*, *CEN/TR 1575*, *EN 1332-5*, *CWA 15778*. The findings of this research show that there is a statistically significant difference in the acceptance of this document in countries of different political system.

1 Introduction

Understanding the importance of acquisition and implementation of different European and international standards and other normative documents that define braille and other similar areas is of great importance for experts that work with persons with visual impairment. Normative documents can be helpful in the preparation and development of selection of assistive technologies important for education in mainstream setting or other activities that support mainstream education, such as braille book publishing, information access or accessibility.

When describing or talking about standards documents, experts most often think about standards. The standard is a document established by consensus and approved by recognised standardisation body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of optimum degree of order in a given context. Standards should be based on consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits (*CEN Internal regulations: Part 3*).

Due to the fast development of new products and demands of markets, European standardisation bodies have developed different types of documents. For example, at the European level, the European Committee for Standardisation (CEN) and the European Committee for Electro Technical Standardisation

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(CENELEC) accept standards and other documents as well: CEN/CENELEC workshop agreement (CWA), Technical Specifications (TS), Technical Reports (TR), Guide (Guide), while European Telecommunications Standards Institute (ETSI) accept standards and Technical Reports (TR), Guide (EG), Technical Specification (TS), Special Reports (SR). Each European country has national standards, institutions that accept standards or develop purely national standards. Croatian Standards Institution accepts these types of document: Croatian Standards (HRN), Croatian Standard Draft (HRS ENV), Croatian Technical Specification (HRS), Croatian Technical Report (HRI), Amendment (A), Correction (Ispr.), i CSI Guide (HRU).

2 Issue

Harmonisation of the EU member states highly values regulating different context, situations or areas. The standardisation may influence public trust in the international production of education materials for the blind. The ground basis for these changes focuses on the roles of scientific knowledge and elites in academia, government, and business. New practices of control and standardization based on measurable, empirical facts or consensus of different interest groups may result with facilitation and user friendly environment in certain area of interest. Furthermore the standardisation has influential part of the strategic development and quality assurance in education and other sectors. Even though debates and practical implications of the standardisation often relate to food, products and safety procedures, other important areas such as terminology, accessibility, education etc. should be addressed more properly.

In different European countries approach toward standardisation of the braille related area is not the same. Different activities such as braille code, adaptation, transcription, new technologies, information access, publishing, even though important for a successful and efficient use of braille in standardised surrounding, are not equally represented in normative documents at the national level. Non-obligatory normative documents, such as workshop agreements or technical reports may foster a closer association rather than a "standardisation" or "uniformisation" in Europe.

3 Aim

The first assumption was that braille can be related to different activities, and standardisation of broader area related to braille can give significant contribution towards closer association, standardisation or just dissemination of knowhow in Europe. The second assumption was that significant differences of the braille at the national notation level resulted with many (unperceived) obstacles, which may relate to the lack of standardisation.

The aim of this paper is to acquire an insight into the present state of the art of standardisation in the area of braille. In this research the present state of standardisation is analysed through presentation of accepted and available normative documents in the European countries by using qualitative and quantitative statistical methods.

4 Sample

The sample of this research consists out of 32 European states. The sub sample consists of EU member states $n_1=27$ (in alphabetical order: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom), and EU member state candidates, $n_2=5$ (in alphabetical order: Croatia, Iceland, FYR Macedonia, Montenegro and Turkey). Each state (or sample sub-group) is different in: size, population, GDP, time of joining the EU etc.

5 Data Collection

To collect needed data different sources have been consulted: Croatian Standards Institute database; National Standards Catalogues [Online]; European Committee for Standardisation, CEN Standards Catalogues [Online]; Perinorm International Database, British Standards Institute, 2009; European Union, [Online] www.europa.eu; National standards catalogue [Online], e-mail contacts (Montenegro, FYR Macedonia).

Also each normative document has been described with important information such as the official code of particular documents, status, title and date of publication. Data collection, analysis and publications of the results were conducted according to the principle of the right of access to information and respecting intellectual property (authorship rights).

6 Analysis

In this research, documents were collected and structured according to the criteria of the type of normative document. Fisher test was used to test the independence of two categorical variables: normative documents (EN 1332-5, EN 15823, CEN/TR 15753, CWA 15778, and purely national normative documents) and European states. The European states were grouped into two categories according to the criteria: size; the total number of population; GDP; time of joining the EU; political system of the states. The hypothesis was tested and probability values lower than 0.05 were considered significant.

7 Hypothesis

The null hypothesis of this research is that there is no difference in accepting the normative documents in European countries.

8 Results

The results show findings of the qualitative (list of the collected documents) and quantitative methodology.

Standardisation at the European level – normative documents			
Status	Code	Title	Date
Standard	EN 1332-5	Identification card systems - Man-machine interface - Part 5: Raised tactile symbols for differentiation of application on ID-1 cards	2006-03-00
Technical report	CEN/TR 15753	Packaging - Package leaflets for medicinal products - braille and other formats for visually impaired people	2008-06-00
Workshop agreement	CWA 15778	Document processing for accessibility	2008-02-00
Standard	EN 15823	Packaging - braille on packaging for medicinal products	2010-12-31

Table 1: The list of standardisation documents at European level

Source: Perinorm International Database, British Standards Institute, 2009

Standardisation at the European level – purely national documents			
Status	Code	Title	Date
Standard	DIN 32976	Braille - requirements and dimensions	2007-08-00
Standard	DIN 32980	Adaptation of 8-dot-braille to 7-bit coded character set	1987-04-00
Standard	DIN 32982	Information processing 8-dot-braille graphic characters - identifiers, names and assignation to 8-bit-codetables	1994-08-00
Draft	DIN 55561	Packaging - braille on packaging / Note: Date of issue 2009-01-05	2009-01-00
Standard	NF Q67-006	Graphic technology - typographical specifications recommended for printing school books in braille	1985-02-01
Standard	DD 264:2007	Packaging - braille and other formats for medicinal products	2007-07-31
Standard	OENORM V 2105	Technical aids for visually impaired and blind persons - tactile inscriptions and information systems	2006-12-01
Standard	UNE 137006:2005	Cardboard packaging for industrially manufactured medicinal products - braille text layout.	2005-10-26
Standard	NEN 2426:1994 nl	Braille - 8-dot-braille for text representation	1994-11-01
Standard	NEN 2422:1992 nl	Braille - the meaning of 6-dot-braille characters grade 0 for text representation	1992-12-01
Standard	NPR 2424:1993 nl	Braille - layout of braille books	1993-09-01
Standard	STAS 7872-87	Hârtie pentru scriere BRAILLE (paper for braille writing)	1987-00-00

Table 2: Purely national standards documents of all 32 states in the sample of this research

Source 1: <http://www.magazin.asro.ro/index.php?pag=2&lg=1>

Source 2: Perinorm International Database, British Standards Institute, 2009

To be able to determine whether there is significant association of the pattern, or certain criteria, the following results show findings of the quantitative findings. Fisher test was used to test the independence of two categorical variables: normative documents (EN 1332-5, EN 15823, CEN/TR 15753, CWA 15778, purely national) and the European states in this sample (size, the number of population, GDP, time of joining EU, political system).

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Constitutional monarchy/Republic * Workshop agreement CWA 15778	32	100,0%	0	0%	32	100,0%

Table 3: Case processing summary: political system and normative document CWA 15778

Constitutional monarchy/Republic * Workshop agreement CWA 15778 cross tabulation Count

		Workshop agreement CWA 15778		Total
		0	1	
Republic	0	23	2	25
Constitutional monarchy	1	3	4	7
Total		26	6	32

Table 4: Cross tabulation; Political system (0: Republic, 1: Constitutional monarchy), Normative document CWA 15778 (0: not accepted, 1: accepted)

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8,669a	1	,003	,012	,012
Continuity Correction	5,744	1	,017		
Likelihood Ratio	7,386	1	,007		
Fisher's Exact Test					
Linear-by-Linear Association	8,398	1	,004		
N of Valid Cases	32				

a. 2 cells (50,0%) have expected count less than 5. The minimum expected count is 1,31.

b. Computed only for a 2x2 table

Table 5: Political system and normative document CWA 15778

Political system	Workshop agreement CWA 15778		Total n(%)
	not accepted n	accepted	

	(%)	n(%)	
Republic	23 (92,00)	2 (8,00)	25 (78,12)
Constitutional monarchy	3 (42,86)	4 (57,14)	7 (21,87)
Total n(%)	26 (81,25)	6 (18,75)	32 (100,00)

Table 6: Political system of the states in the sample and acceptance of the workshop agreement CWA 15778

The states are grouped into two categories, according to political system of the state (republic, constitutional monarchy). The results show that there is a statistically significant difference whether the Workshop agreement CWA 15778 (Fisher $P=0,012$) is accepted or not. In other words, 92% of states that have "republic" as their political system and 43% of the states that have "Constitutional monarchy" as their political system have not accepted CWA 15778. Also Chi square analysis was not interpreted, due to the fact that test requirements for Chi square were not fulfilled.

9 Conclusion

State of the art in standardisation of the braille depends upon the degree of order and priorities in the community of persons that use braille. There are differences in approach and in the level of awareness about the need of standardisation of braille. The findings of this research show that there is a statistically significant difference in the acceptance of this document in countries of different political system.

The practical implications of these findings imply that the standardisation process and normative documents should be taken into account when creating strategies of standardisation of braille related area, that in a broader sense may affect education, literacy, information access and other use of braille in everyday surrounding. The Workshop Agreement CWA 15778:2008 Document processing for accessibility, has the possibility of great influence on gaining competencies in this area, but states have not shown any interest to accept this document.

In the CWA 15778:2008, some recommendations for publishing and information accessibility are given (converting material, braille publishing). This can be helpful in developing and organising accessible publishing for both partially sighted and blind persons and in turn may have great influence upon mainstream education of the blind and partially sighted.

Some recommendations include definitions of certain braille codes for the mathematics (The US Nemeth code, The German Marburg code, The UK Braille Mathematics Notation, W3C's MathML) or for writing music. Some recommendations are given for audio documents as well (WAV, MP3 i MPEG formats, Daisy format). The conclusion part of CWA 15778 offers different scenarios and possibilities of data and document editing and accessibility in the publishing business. The most important part of the document is the recommendation for an interdisciplinary approach to removing obstacles and offering "full accessibility". Also, purely national normative documents, are definitely examples of good practice, or "good standardisation" where standardisation is used as a resource and a tool for reaching order in the context of: braille layout of books; braille requirements and dimensions, graphic technology, typographical specifications recommended for printing school books

in braille; paper for braille writing; braille – the meaning of 6-dot-braille characters grade 0 for text representation.

The standardisation of braille related areas should be integrated and mainstreamed in European organizations such as CEN or CENELEC.

10 Literature

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