Approaches and Perspectives on Assessment of Information and Media Literacy Related to Formal Education

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Abstract. This article gives a short overview of national and international discourses on media and information literacy, and states that approaches for the assessment of media literacy mostly miss in including the knowledge dimension. To address this gap, results are presented here from the application of a scale for the assessment of digital media knowledge. Developed in Germany and translated to Portuguese, the scale was used to conduct a small study in Brazilian schools. The example of the concluded study is afterwards reflected upon with a view to the international discussion on the assessment of (digital) media literacy.

Keywords: Media literacy, information literacy, media competence, assessment, formal education, Brazil.

1 Introduction

The various developments related to digital media in the last decades, especially the availability and use of information and communication technologies (ICT), also resulted in a growing importance of ICT-related competencies which therefore are a basic precondition for livelihood in the modern, globalized and increasingly digitalized world [1]. A variety of studies in the past took this as a starting point for research and focused upon the availability and use of media, especially digital media [2], and partially took assumptions upon the low level of ICT-related competencies as an assured theoretical basis to develop trainings for employees, educational professionals and furthermore.

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Yet, a common understanding of required skills does not exist up to now, and even in terms of used terminology there is no real agreement. Existing initiatives under terms such as information literacy, media literacy, and media competency do not only present differences in terms of terminology, but also in terms of the underlying theories and approaches [1]. As a consequence, standards related to media literacy education are mostly missing which also affects the development of assessment instruments for measuring media competencies as well as information literacy. But it's not only standards that are missing: When analyzing actual literature it becomes obvious that empirical studies analyzing media-related competencies are quite rare in general and that most of them, for instance, focus upon media use, media availability or computer self-efficacy and not upon competencies [3]. Thus, an essential dimension of the concept of competence is momentarily mostly missing in respective studies: knowledge.

2 Assessing Media and Information Literacy: A Global View

The above described developments led to a very dynamic as well as heterogeneous global discussion around terminology, dimensions, range, and context-dependence within the field of media literacy. Although there is a variety of terms applied internationally, still the best known term is media literacy. It has a long history of more than fifty years but primarily focuses on discussions around media such as newspapers and radio [4]. Since the 1980s and the emergence of Information and Communication Technology (ICT), terminology originating from the analogue media was amended by terms such as computer competencies, media literacy education [5], digital literacy [6], ICT education [7] and media education [8] and furthermore. Comparable appraisals are clear when looking to different dimensions of the terms, which are also being seen in a diverse way – not necessarily between different languages or nations but also in different (national) discourses.

Looking on this diversity of approaches and understandings, most researchers agree that the area of assessment in this context often lacks theoretical grounding. Whichever approach is taken – it will not fulfill all or even most of the requirements from different disciplines. One possible solution is to look at cognate disciplines, such as empirical educational research. Within this (more or less psychological) context, cognitive aspects are being understood as a basic principle for competencies [9] and thus, also for digital media-related competencies. But – as was noted in the introduction – approaches assessing some form of media literacy mostly miss in implying media (or ICT) related knowledge.

On this basis, we developed an instrument focusing upon procedural as well as declarative ICT knowledge, which is called ITK.basic. The ITK.basic was developed in Germany and contains 22 items given in multiple choice format (for an example item of the English version see table 1) and provided reliable results in its German version. Because of this and the necessity of an instrument allowing the assessment of media related knowledge in different languages, it was decided to translate the instruments to different languages. For now, there are English and Portuguese

versions as well as the German original. Results from the application of the Portuguese version in Brazil are shown below, results from the English version will be presented in another article.[1]

3 Results of Applying the ITK.basic in Brazil

Before presenting details of the results of the study, it is common to give some information on the context of the study with a view to a better traceability.

Table 1. Example item from the English version of the ITK.basic

What is the meaning of the expression "malware"?
☐ It's a synonym for computer viruses.
☐ *Unwanted and user-damaging software products.*
☐ Faulty software products.
☐ It's a software which contains all the offers from American malls.
☐ I don't know.

3.1 Basic Information on Application of the ITK.basic in Brazil

The questions were translated by a Brazilian researcher from English to Portuguese and afterwards applied to 59 Brazilian educational professionals from two basic public schools, including primary and middle grades. All repliers attended the bimestrial planning meeting in April, where a brief announcement was made about the survey proposal and aims before they answered and gave back their forms. The summary of some basic descriptive data of the sample is shown in table 2.

Table 2. Descriptive data from the ITK.basic applied in Brazil

	N	Female	Male	Average age	Work time average
School 1	34+1*	26	8	39.2	11.5
School 2	24	19	5	40.5	12.4
Total	59	45	13	39.7	11.7

*One participant did not indicate gender

Both schools are located in south of Brazil, the infrastructure and the staff are essentially funded by the Joinville city hall, which means that schools have been dealing with many cuts on its budget over the years. By law, to be admitted to the board all staff needs to pass a public exam, and the principal is usually a teacher who

[1] In case you are interested in the instrument or in developing a version in another language: We are happy to provide the ITK.basic for educational non-commercial contexts. Just contact one of the authors.

is nominated by the mayor. The sample consists of many different educational professionals who work in both schools: Classroom teachers of different subjects (such as Portuguese, English, Math, Science, and Humanities) which are 77 percent of the sample, and some other occupational groups such as educational officers, principals, special needs teachers, counselors, as well as a principal assistant.

The researchers experienced some methodological issues. The original scale, which was adapted for this study from the German version of the ITK.basic and which was developed to access basic ICT knowledge of teachers, teacher trainees and teacher students, had an overall reliability of Cronbach's $\alpha = 0.84$. Data in this study shows a Cronbach's α of 0.794, which is to be classified as moderate [10] but in context of the relatively small control sample seems quite acceptable. It furthermore suggests that this version of the ITK.basic seems to work well, what is confirmed by the calculation of point-biserial correlations [11][2]. A Goodness-of-Fit test shows that the 1 PL Rasch model can be used. Despite the above mentioned methodological issues, which suggests reliable quality of the Portuguese version, some results related to the level of ICT-related knowledge of the probands might be interesting at this point, too. When analyzing the data it has to be remembered that this is no representative study, results therefore can hardly be generalized.

3.2 The ITK.basic in Brazil: Descriptive Results and Impressions

The analyses from the survey data focus on counting the percentage of correct and false answers. Thus, we recoded the answers from the multiple-choice format to a dichotomous (correct/wrong answer) format. Fig. 1 shows the percentage of correct answers for the respective questions, which generally are lower than in the German studies that have taken place so far [see below].

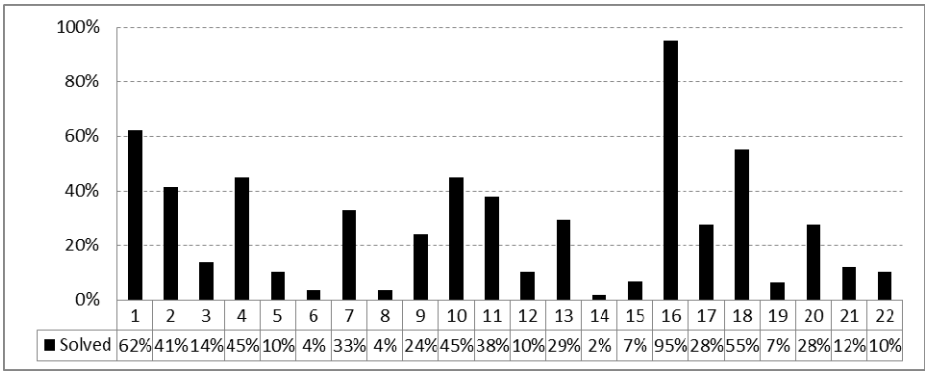

Fig. 1. Descriptive results: Percentages of correct answers to the questions 1 to 22

[2] Two items of the instrument didn't work as well as supposed. Additional analysis will be necessary which would lead to far in this article.

Taken the results as a complete score, they are actually quite poor, since – looking at an average score using all participants and all questions – only 27percent chose the correct answers and a large percentage (nearly half of all the participants) mostly chose the answer category *I don't know* which is also classified as *not solved*. Compared to results of a German study the participants show a significant lack of ICT-related knowledge [12]. Thus, it is supposed that the level of competencies is significantly higher in Germany – at least when comparing the two assessed samples (again: both surveys are not representative). Besides statistical results, it was interesting to observe the way repliers' reacted. The principals and many teachers wanted to discuss not only the difficulty level of the questions, but indeed the impact of the questions into their lives. From this we could draw three conclusions.

1. First, most of the participants recognized that they lack a tremendous number of skills to deal with technology, especially in those questions that required awareness and knowledge of computer components, setting rules, and functions (hardware and software). Despite that, the questions related to web technologies (such as Wikipedia and E-Mail) were those where with the highest number of correct answers.
2. Second, some of the participants questioned whether the 'basic knowledge' of ICT, as defined in the questionnaire, was suitable for Brazilians. That argument could be seen as sustained by the well-known cultural resistance against technology which in fact is an important thing to be considered: Taking the average age of involved teachers, which is about 40 years, and connecting this to a historical and cultural point of view, it becomes clear that most of them were already employed when ICT came to the educational system in the 1990's. The delay for Brazil to open its borders to modernity apparently had a negative impact on those who were born before 70's. The pace of the technological revolution was faster for them, they had to get used to so many different procedures and the price of devices was really high back then. Also some of them had experienced traumatizing economic events, like seeing people who lost their jobs when their position was extinct or they were traded for machines [13]. That made them see technology in a threatening way and developed a cultural resistance to deep engagement with computers and gadgets.
3. Third, almost all of the younger teachers, which means those who were younger than 40 years old, confess they did not have problems using technology on a daily bases, but they also confess they did not know much about using ICT technology as a pedagogic tool. That was a complaint from the senior teachers too, which let them conclude that the Brazilian educational system, the universities and the governmental qualification programs must be rethought and more or less completely redesigned.

These results shall be sufficient at this point since this article has a focus on problematic issues of the assessment of (digital) media literacy. Nevertheless, it shows an outline of impressions from using a questionnaire for the assessment of teacher's knowledge in the area of digital media. Hence, the following section will sum up these with a view to the general discussions on the assessment on media literacy.

4 Conclusions and Perspectives

The conclusion will be divided in two parts – one reflecting the present study and one analyzing this with a view to the international discussion around assessment of media literacy. The study represents one of a large number of approaches trying to get a view into media literacy (in this case: of teachers or persons from the field of formal education from Brazil). Although it used an objective, reliable and valid instrument for the assessment, there are remaining questions. One of those – which was also mentioned by the test persons – is, whether it is methodologically possible to just translate the chosen questions from German into Portuguese and use them without changing their content. Of course this is a general problem of large scale studies aimed at international assessments and can be answered from a content-based viewpoint: Literacy related to digital media should be somehow comparable between different countries, although it might differ in detail. Similar argumentations are being used in studies such as PISA or TIMSS, where internationally valid constructs are assessed.

Another aspect is that this study just asks for ICT specific knowledge. It therefore just pictures one dimension of the (ICT) literacy concept which might be an important one but, nevertheless, cannot be taken without further information. While this study was carried out to prove the quality of the ITK.basic scale in its Portuguese version, the scale is supposed to be used in combination with other scales asking for more motivational (e.g., ICT-related self-efficacy) and behavioral facets (e.g., use of ICT in various contexts). Hence, what comes with the use of multiple scales is the necessity for an adequate time frame for answering all the questions, which is a critical point inside as well as outside of formal education systems.

Coming to the use of the ITK.basic in Brazil, the organizers found it impressive to see the effort of this community of educational professionals as they cope with their new professional needs [13-14]. They became aware of the difficulties and the challenges regarding the ICT knowledge, even if most of them are afraid of the literacy they must still develop. There are a lot of internal problems in school, besides the qualification in digital literacy itself, but they also became excited to look for solutions [14-15]. This made the principals involved ask for a copy of the ITK.basic scale, because they intend to set a task group to work and find clues regarding digital literacy and what the teachers need to use technology as a pedagogic tool instead of giving them just computer training. They want the findings brought to local educational authorities to help solicit suggestions and options for the training courses which will be going on during the winter. In particular, this study contributes to the understanding of an actual media literacy taxonomy in the involved schools as well as giving researchers clues about the historical and cultural aspects that have influenced some countries that share common characteristics.

This article highlights problematic issues when assessing media and information literacy through the example of a small study conducted in Brazil. This, as well as many other approaches, has no common theoretical basis for its assessments, which is strongly needed to promote national and international research projects. However, some promising projects grew up over the last year, which partially integrated some of the mentioned aspects [e.g., 16-17].

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