WIKIPEDIA AT PRIMARY SCHOOL: TEACHERS’ USE AND PERCEPTIONS. THE CASE OF SOUTH AFRICA

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Abstract

Wikipedia is a major source of information, and is known for its wealth of content, its openness and accessibility. Wikipedia could be a powerful educational tool, especially in countries with little access to educational materials. But is it already so? On the one hand, many educational projects reference Wikipedia for both content learning and information literacy education; on the other, Wikipedia is regarded as a source of uncontrolled misinformation. In this study, we investigated how primary school teachers use and integrate Wikipedia in their practice in a multilingual country like South Africa. Do teachers use Wikipedia and how? What are its perceived affordances and drawbacks? What features or situations influence the integration of Wikipedia in teaching practices? What topics are relevant in relation to national curriculum statements? We surveyed 32 primary education teachers in community schools in the Cape Town area, focusing on their use of Wikipedia in terms of both planning and in-class application. According to the teachers we interviewed, Wikipedia is a promising teaching and learning instrument. The data provide insights about differences between in-service and pre-service teachers, between teachers with different levels of ICT skills, and between teachers that have different home languages. Despite being based on a small sample, the results help to identify pathways for the development and integration of Wikipedia as an educational tool.

Keywords: Wikipedia, primary school, home languages, instructional materials.

1. THE MANY FACETS OF WIKIPEDIA IN EDUCATION

Wikipedia is today a mainstream source of information: with over 500 million readers, over 280 linguistic editions and more than 40 million articles, it is the largest and probably most used encyclopaedia in the world. Wikipedia is essentially an online archipelago of websites, easily accessible online and available offline on CD, DVD and USB devices. Through Wikipedia Zero [1], it is currently available via mobile phones for free in 54 countries, including many African countries. Moreover, Wikipedia’s content can be freely used, reused and modified for non-commercial purposes, as Open Educational Resource (OER) released under a Creative Commons attribution share-alike license. For the wealth of its content, its openness and accessibility, Wikipedia is a potentially powerful educational tool, especially in environments where access to educational materials is limited. But is it really so? How do teachers perceive Wikipedia, and how do they use it in their profession?

Wikipedia is currently deployed in many education projects across the world. For example, the Wikipedia education programme [2] – a session of the Wikimedia project outreach – coordinates and supports initiatives triggering the involvement of students, teachers and schools in improving content on Wikipedia. The Wiki Education Foundation [3] is a non-profit organisation that supports initiatives linking Wikipedia with schools by involving students and teachers in improving content on Wikipedia.

In the academia, and among many teachers, Wikipedia is known as the primary copy/paste source for schoolwork [10], a sort of hub of fake news, where quality is not sufficiently guaranteed by the “wisdom of the crowd” [11,12] or by peer control. Moreover, while Wikipedia hosts a wealth of linguistic versions, and strives to acquire an international and intercultural perspective, it still remains heavily unbalanced, with about 5.5 million English articles and only about 47'000 articles in Afrikaans and less
than 1’000 in Zulu (isiZulu), Xhosa (isiXhosa) or Sesotho. How do teachers in a multilingual country perceive and overcome such linguistic imbalance? Consequently, how do they use and appropriate Wikipedia in culturally diverse and multilingual educational settings?

Many educational projects reference Wikipedia both for content learning [4] and for information literacy education [5,6], but the literature provide only limited evidence about the impact of Wikipedia on compulsory education. Some recent studies [7,8] include Wikipedia among the basic literacy tools of many students, often against the advice of their teachers – but evidence is limited to secondary and tertiary education, i.e. in the age range when young people have more access to the Internet and own a personal digital device [9]. There is a paucity of research that focuses on Wikipedia use by either primary school pupils or teachers in general. This study, and the Wikipedia Primary School project within which it was conducted (see below), tries to provide initial exploratory insights to fill this gap.

Against such complex and multifaceted background, we investigated how primary school teachers use and integrate Wikipedia in their profession in a multilingual African country like South Africa. This study was designed and developed within the applied research project Wikipedia Primary School SSARJP Programme [13]. This joint initiative specifically focused on the theoretical framework of the previous Wikipedia Primary School project [14] and on the results of the WikiAfrica Primary School Feasibility Study [15]. It aimed at (a) developing and evaluating a system to assess Wikipedia articles for primary education; and (b) involving a wide network of scholars and contributors in their production, with the overall goal of addressing the gap between Wikipedia and primary education. The research questions identified for this study are the following:

1. Do South African primary school teachers use Wikipedia? Do they use it both for teaching preparation and for in-class activities?
2. Are there differences in the actual use and perception of Wikipedia between South African teachers with different home languages?
3. Are there differences in the actual use and perception of Wikipedia between in-service and pre-service teachers?
4. Are there differences in the actual use and perception of Wikipedia among teachers teaching in different grades?
5. According to primary school teachers, which Wikipedia topics (articles) are more relevant in relation to South African National Curriculum Statements (NCS)?

2. BACKGROUND: WIKIPEDIA IN SOUTH AFRICAN PRIMARY SCHOOLS

While a number of studies examine the application of user-generated online platforms such as Wikipedia in higher education [16], there is a paucity of research on the use of such platforms in the South African primary school sector. While it is difficult to present definite figures on the information and communication technology (ICT) situation in schools across the country, a number of initiatives have promoted the adoption of technology in primary schools. These have included technology access programmes, digital content development initiatives, and user-led projects. The Western Cape Khanya initiative is one noteworthy example. However, such initiatives are often piecemeal and report limited scaled success [17]. Factors that contribute to the under- or failed implementation of ICT in primary schools include resource scarcity, unskilled teachers, ill-prepared management, vandalism and theft, and diverse socio-cultural practices [18].

Notably, lacking and costly infrastructure, as well as general resource scarcity, inhibit the introduction and use of internet-based services, and the consequent availability of open instructional material. [19] found that primary schools in the Gauteng Province were not in a position to embrace ICT as they fundamentally did not have the required infrastructure. This is especially in respect of school libraries, which are central in the deployment of ICT initiatives. Currently over 90% of public schools in South Africa do not have functional libraries, which is a systemic obstacle in the delivery of technology-enhanced education [20].

The situation is especially volatile in rural and poor black schools, which already have limited access to qualified teachers and technological resources. And even though some resources have been channelled to these schools, “the South African school system largely fails in mobilising poor children into the labour market or tertiary education” [17, p. 6]. Furthermore, those schools with ICT access tend to use the technology in a limited manner, and generally focus on learning about computers
(digital literacy) rather than integrating ICTs into pedagogy [21]. Similarly, pre-service teachers are not sufficiently trained on the pedagogic integration of technology, but rather on the development of technical skills [22].

3. METHODOLOGY

3.1.3. Sample and survey instrument

In this study, we surveyed 30 teachers from two primary schools in the Metro Central Education District of Cape Town.

Table 1. Distribution of the sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Values</th>
<th>No. Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>23</td>
</tr>
<tr>
<td>Employment Status</td>
<td>Veteran (10+ years)</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Novice (&lt;10 years)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Pre-service</td>
<td>8</td>
</tr>
<tr>
<td>Native/Home Language</td>
<td>English</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Afrikaans</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Zulu/Xhosa/Sotho</td>
<td>7</td>
</tr>
<tr>
<td>ICT Index</td>
<td>Low (lower third)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>High (higher third)</td>
<td>11</td>
</tr>
<tr>
<td>Grades taught</td>
<td>Foundation</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>4</td>
</tr>
</tbody>
</table>
The schools were selected based on convenience: both schools partook in a previous SSAJRCP-funded research programme involving digital literacy training. Both schools serve poor and marginalised communities and both have Xhosa and English as the primary instruction languages. For purposes of confidentiality, the names of the schools and teachers are anonymous. Additionally, contacts in the mailing list of teachers that participated in a workshop organised by the Wikipedia Primary School project in Cape Town in January 2015 were also sent an invitation to the survey. For triangulation purposes, the survey was also sent to pre-service teachers enrolled at a local university.

The survey asked teachers for personal information (home language, sex, age), professional information (grades taught, years of service, if generalist or specialised), and use of ICT for personal and professional purposes. It also addressed their use of Wikipedia in terms of planning and in-class use, and eventually asked an evaluation of the relevance of some articles/topics. The survey was conducted online, so that only teachers having access to a computer, tablet or mobile phone with an Internet connection could participate. The information on ICT use was coded into a single ICT index, which considered the number of personal digital devices owned, the declared amount of time spent online and frequency of connection. The resulting dataset is composed of 32 full responses, distributed among the segments of our population as shown in Table 1.

The sample in this study is therefore relatively small, so that we did not conduct any regressive statistical analysis, but focused on descriptive statistics in order to provide preliminary insights on the use and perception of Wikipedia among South African primary school teachers. The results presented in the next paragraphs should be interpreted as suggestions for further research, rather than definitive conclusions.

3. RESULTS

The overall results of our sample indicate (Figure 1) that teachers use Wikipedia, but mostly for personal use (20 out of 32 indicate often or always). Professional use (i.e., teaching-related) is less frequent, while in-class or lab use with pupils is rare, with only 10 respondents indicate often or always.

Wikipedia is generally perceived as a useful educational tool, even if slightly more useful for teachers (2.95 on a 4-point-scale) than for pupils (2.86). Moreover, teachers tend to think that Wikipedia is more useful for older students (especially senior grades), and consequently for teachers teaching in those grades.

![Figure 1. Overall Wikipedia use](image)

The following sections explore the same variables comparing different segments of our sample, in order to provide a more fine-grained and nuanced picture. Given the sample size and the uneven segmentation across the different variables, the results were normalised and are presented as percentages.
3.1. Native/home languages: Majority and minorities, online and offline

As mentioned in the introduction, Wikipedia has an overwhelming majority of articles in English, corresponding to its major active community – a situation influenced by the fact that many international Wikipedia contributors speak English (which is not the case for languages like Xhosa or even Farsi). The resources offered in Zulu, Xhosa, Sotho and even Afrikaans pale in comparison. Consequently, we expected differences in teachers’ use and perception of Wikipedia depending on their native or main home language (in South Africa, many are at least functionally bilingual).

Indeed, the data indicates clear differences (Figure 2). Interestingly, native speakers of Bantu languages (Zulu, Xhosa, Sotho) use Wikipedia more for personal and professional activities, but not with pupils in class or labs, where English-speaking teachers use it more often for educational activities (50%, compared to 20% Afrikaans and 29% Zulu/Xhosa/Sotho) as well as for personal use. A possible explanation is that the former group of teachers have pupils with a relatively poor command of English, so that English Wikipedia materials are not useful. Another explanation could be a lack of self-confidence in using English materials for non-English native speakers. Furthermore, teachers in general could be unsure of how to use Wikipedia in a pedagogic manner. We will explore this inversion pattern in later analyses.

![Figure 2. Wikipedia use according to native/home language (figures are the sum of “often” and “always” responses)](image)

<table>
<thead>
<tr>
<th>Native/home language</th>
<th>Wikipedia is useful for teachers (average)</th>
<th>Wikipedia is useful for pupils (average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>3.04</td>
<td>3.00</td>
</tr>
<tr>
<td>Afrikaans</td>
<td>2.08</td>
<td>2.67</td>
</tr>
<tr>
<td>Zulu/Xhosa/Sotho</td>
<td>3.31</td>
<td>3.28</td>
</tr>
</tbody>
</table>

Such findings match the results on the perceptions of Wikipedia (Table 2): native speakers of Bantu languages think that Wikipedia is more useful than those who speak English and Afrikaans, both for teachers and pupils. This perception is despite the fact that they have less content in their native language, and that they have less instructional materials in their home language in general. Another
possible explanation is that Wikipedia could be perceived as a “majority” or “mainstream” source of information, and is more welcomed by those who are open to integration opportunities.

### 3.2. Experience: Pre-service and in-service teachers

For the purposes of this study, participants were divided into three groups according to experience: pre-service teachers, novice teachers (<10 years of service) and veteran teachers (10+ years of service). Of course, these segments roughly correspond to age differences: pre-service teachers are normally in their twenties, novice teachers are normally between 30 and 40 years old (average 35), while veteran teachers are over 40 years old (average 49). While one would expect that younger “digital native” teachers would be more enthusiastic to use Wikipedia, the data indicate otherwise: veteran teachers claim to use Wikipedia more often both for personal and professional purposes, even if they are the ones who use it least in class (29% compared to 38% of pre-service teachers).

Table 3 describes the average value of the assessment of usefulness of Wikipedia for the different groups. Overall, veteran teachers think that it is more useful than the other groups. Such results are not straightforward, and potentially counterintuitive. One possible interpretation is that younger or less experienced teachers rely more on official materials, while veterans are keener to use open online resources to create new learning activities. Another possible view is that younger and less experienced teachers use other sources of online information and materials, and do not perceive Wikipedia as a reliable or affordable source of educational material.

**Table 3. Wikipedia perception across native/home language groups (values are on a 4-point-scale)**

<table>
<thead>
<tr>
<th>Native/home language</th>
<th>Wikipedia is useful for teachers (average)</th>
<th>Wikipedia is useful for pupils (average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-service</td>
<td>2.49</td>
<td>2.93</td>
</tr>
<tr>
<td>Novice</td>
<td>3.00</td>
<td>2.54</td>
</tr>
<tr>
<td>Veteran</td>
<td>3.25</td>
<td>3.15</td>
</tr>
</tbody>
</table>

### 3.3. Type of teaching: Grades

Our data suggest that teachers think that Wikipedia is more useful for students in senior grades and their teachers than for younger ones. This likely corresponds to the fact that higher grades in compulsory education have more content-oriented learning goals with respect to lower grades, where basic literacy and numeracy along with socialisation play a central role. If analysing our sample with respect to the grades taught, this opinion seems to be confirmed: teachers from all grades indicate that Wikipedia is more useful for teachers and pupils in senior grades.

However – even if the distribution of the sample (which only includes 4 teachers from senior grades) does not allow any sound conclusion – the level of perceived usefulness varies significantly: while teachers teaching in lower grades think that Wikipedia is very useful for teachers in senior grades (average 3.08), teachers actually teaching in senior grades assign Wikipedia scores as low as 2.56 for teacher use and 2.00 for class/lab use. Conversely, foundation grade teachers indicate that Wikipedia is only moderately useful for them (2.40), but more useful for intermediate (3.57) and senior (3.43) grades. This might be interpreted as a gap between the perception of Wikipedia and its actual integration in the teaching practices: everybody agrees that it is a valuable resource, but also that it would be better exploited by others – which is a way of saying that they see the worth, but not how to make good use of it.
3.4. Teachers’ ICT skills

Finally, our sample was segmented by digital skills, using a proxy Information and Communication Technology (ICT) index as described above. In this study, we assumed that this index would reflect actual ICT skills. The data indicate that there is no significant difference in the use of Wikipedia for personal purposes among the three classes (high/average/low ICT skills). Interestingly, while high-ICT users use it more often for professional use (Figure 3), low-ICT users use it more for personal use.

This finding seems to follow the same inversion pattern that was earlier described. It might indicate that ICT-skilled teachers prefer using Wikipedia in class, directly with their pupils (assumedly in research work, or teamwork), while others do not: not because of Wikipedia, but because they fear technical failures or issues in class technology management. If this is proven true, this would be an additional indication that teachers will only use digital resources after they are sure to be able to cope with the basics (computers, connections, logins and passwords, and the like) [24]. This seems to be confirmed by the fact that low- and intermediate-ICT users think that Wikipedia is more useful than high-ICT users, even if they use it less (Table 4).

![Figure 3. Class/lab use by ICT index](image)

**Table 4. Wikipedia perception across ICT index groups (values are on a 4-point-scale)**

<table>
<thead>
<tr>
<th>Native/home language</th>
<th>Wikipedia is useful for teachers (average)</th>
<th>Wikipedia is useful for pupils (average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-ICT</td>
<td>3.31</td>
<td>3.00</td>
</tr>
<tr>
<td>Intermediate-ICT</td>
<td>2.97</td>
<td>3.16</td>
</tr>
<tr>
<td>High-ICT</td>
<td>2.70</td>
<td>2.50</td>
</tr>
</tbody>
</table>

3.5. Topics: perceived relevance

The assessment of educational topics was central for the Wikipedia Primary School project, in order to identify relevant Wikipedia articles to be improved or created from scratch. The selection operated by school curricula content is key, as it dictates what is worth learning, and what is to be considered part
of the national culture [24]. In our study, through the lens of Wikipedia, we observed how teachers perceive some topics presented in the South African curriculum.

At an early stage in the project, we conducted a comparative analysis of South African National Curriculum Statements (NCS) and Curriculum Assessment Policy Statements (CAPS) with existing Wikipedia articles, in order to identify topics that (a) included content-intensive learning objectives, as opposed to skills or competences development, and could therefore benefit from encyclopaedia articles; and (b) were relevant in school curricula, and therefore mandatory for teachers. Moreover, both South African specific topics and general topics were selected. For each topic, specific items (i.e., actual or potential Wikipedia articles) were listed. The final list is presented in Table 4.

<table>
<thead>
<tr>
<th>Topic area</th>
<th>No. of items</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food and food processing</td>
<td>5</td>
<td>general</td>
</tr>
<tr>
<td>Transport of land</td>
<td>6</td>
<td>general</td>
</tr>
<tr>
<td>Materials</td>
<td>4</td>
<td>general</td>
</tr>
<tr>
<td>Electricity</td>
<td>5</td>
<td>general</td>
</tr>
<tr>
<td>South African Leaders</td>
<td>5</td>
<td>local</td>
</tr>
<tr>
<td>History and South African heritage</td>
<td>11</td>
<td>local</td>
</tr>
<tr>
<td>Recent history and nation-building events</td>
<td>10</td>
<td>local</td>
</tr>
</tbody>
</table>

In the survey, respondents were asked to indicate how much they would like to find suitable information for teaching about each item on Wikipedia, on a 3-point-scale.

The overall results indicate that, in general, teachers would like to find content suitable for classroom use on Wikipedia on most topics. The most requested topics are technical in nature, namely (in order of relevance) Materials, Electricity and Transport, along with some local topics such as South African Leaders and Recent history and nation-building events. Some of these topics are equally important for all groups of teachers, namely Electricity, Materials, Transport (high relevance) and Food processing (average relevance).

It is interesting to point out that our data provide a clear indication that technical articles are given higher relevance. Such articles are usually also less subject to criticism than articles related to cultural or historical topics, but are at the same time too complex and detailed for actual direct use in primary education. The development of a proper format, that would allow teachers to easily identify what information should be selected for good primary education instruction, would possibly provide a novel connection between Wikipedia and schools.

4. CONCLUSIONS

Although not conclusive, our findings indicate that primary school teachers use Wikipedia more for personal than for professional activities, and not so often in class with pupils. We discovered that while native speakers of other (non-English) languages think that Wikipedia is more useful than native English speakers, the latter group uses it more often – a factor that could be traced back to the linguistic imbalance of Wikipedia. In the same way, we identified a hypothesis about the relationship
between ICT skills and the use of Wikipedia. Here as well, teachers with low ICT skills think that Wikipedia is more useful than the others, but use it less, suggesting that ICT skills, along with the availability of adequate technical infrastructure, is key.

Interestingly enough, our data indicate that veteran teachers (who are also generally older) use Wikipedia more than novice teachers. Such finding might seem counterintuitive if we think of younger teachers as "digital natives", but at the same time corresponds to the fact that experienced teachers know more about using different educational tools, even if they are online tools, and also to the fact that pre-service teachers do not really learn how to integrate technology in pedagogical ways [22]. In any case, a deeper analysis of the instructional materials ecosystem of teachers could be necessary for a better understanding.

The last part of our study was devoted to assessing the perceived relevance of some global and local topics (or articles). In general, teachers value Wikipedia content for classroom use on most topics, especially those technical in nature.

Given the small sample, the results are not conclusive. Nonetheless, we suggest that a deeper understanding of teaching practices and perceptions would deliver useful insights for harnessing Wikipedia’s educational potential. Such understanding should take into account linguistic and cultural differences, professional experiences and ICT skills, and also micro-level professional differences (e.g., across grades and curricula). We hope that this study helps to identify pathways for harnessing Wikipedia’s educational potential in primary education.

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REFERENCES


