Teachers' use of Wikipedia with their Students

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Abstract: One of the most impressive phenomena in the creation and dissemination of human knowledge in recent years is Wikipedia, an encyclopedia written collaboratively by Web users. Nevertheless, teachers tend to oppose the use of wikipedia by their students and question its reliability. This paper explores the perceptions of k-12 school teachers in Israel towards the quality of the information in wikipedia and the reasoning they hold for these perceptions. Findings show that most of the teachers perceive Wikipedia as an environment of middling to poor reliability, accuracy, and timeliness. Many teachers do not realize how authoritative information is when generated by "wisdom of crowds" and interpret it as unacceptable and untrustworthy.

Introduction

One of the most impressive phenomena in the creation and dissemination of human knowledge in recent years is Wikipedia, an encyclopedia written collaboratively by Web users. Unlike traditional encyclopedias, its entries are produced by contributors irrespective of their level of formal education. Wikipedia is based on the 'wisdom of crowds' idea, which posits that information produced, accumulated, and critically examined by a critical mass of people will be of equal if not superior quality than information written by authoritative and reputed experts, however highly esteemed they may be (Surowiecki, 2004). A study in the journal Nature, comparing the quality of information in Wikipedia with that in Encyclopedia Britannica, found a similar number of errors in both encyclopedias and saw no meaningful advantage in one over the other (Giles, 2005). Another study that examined the quality of historical entries in Wikipedia found Wikipedia no less accurate than the Encarta encyclopedia (Rosenzweig, 2006).

Not only does Wikipedia defer to other encyclopedias in quality, it has clear advantages over the others: it is accessible anywhere and at any time, costs nothing to use, updates its contents rapidly and efficiently, and allows uploading in unlimited quantities. These features make Wikipedia an important if not a central resource in our lives (Johnson, 2006). It is no wonder, then, that Wikipedia is one of the ten most popular sites in the world in number of users and 'hits' (Nielsen, 2011).

Studies on the extent of educators' (school teachers and academic lecturers) use of Wikipedia, however, paint a totally different picture. Teachers oppose Wikipedia widely (Schiff, 2006). Many are unwilling to accept it as a reliable source of information for learning and teaching purposes. Furthermore, even teachers who use Wikipedia for personal needs do not encourage their students to do the same; some even forbid them to use it as a source of information (Eijkman, 2010).

The way school teachers relate to Wikipedia and refer to this environment has an importance that transcends their personal use of this resource. Teachers are important agents

of knowledge in the information society; they shape the use habits and attitudes of the generation to come. This study asks how primary and secondary teachers perceive the quality of information on Wikipedia, and why.

Background

The Authoritativeness of Knowledge in Wikipedia

The authority of the knowledge in most known encyclopedias such as Britanica for instance, stems from society's belief that academic scholars are the most reliable sources for the creation of scientific knowledge (Burke, 2000). In this state of affairs, the public perceives academic experts as the authority best entrusted with the production of scientific truth. The reader assumes that since the author who signed the entry is an expert in his or her field, the contents will mirror and objectively present the latest knowledge in the field. Even though encyclopedia researchers have warned about ideological, political, and value biases in these works (Zimmer, 2009), an encyclopedia is still considered a rather reliable source of knowledge.

Wikipedia, in contrast, defines itself up front as "the free encyclopedia that anyone can edit" (Wikipedia home page). Such a definition challenges the authoritativeness of the information that Wikipedia presents. If anyone can edit the contents, are they reliable enough? If the writers of Wikipedia lack authority in the fields they are writing about, where does Wikipedia get its authority and can its information be trusted? Only by answering these questions can Wikipedia's authority as a credible, trustworthy source of information be placed on solid ground.

Wikipedia's source of knowledge rests not on its authors' authority as sources of knowledge but on the 'wisdom of crowds' mechanism (Surowiecki, 2004; Galton, 1907) that it embodies. The phenomenon denoted by the wisdom of crowds concept indicates that "under the right circumstances, groups are remarkably intelligent, and are often smarter than the smartest people in them. Groups do not need to be dominated by exceptionally intelligent people in order to be smart" (Surowiecki, 2004, p. 13). Collective wisdom does not surpass the sum of its components under all conditions. Groups may make wrong if not destructive decisions, as history shows. Three conditions assure that the crowd will be more intelligent than its individual constituents: (1) diversity in the qualities, areas of interest, and expertise that the individuals bring to the collective; (2) the individuals' independence and ability to make independent decisions; (3) the decentralized nature of the group along with the availability of mechanisms to improve communication and trust among group members. These three conditions, if met, are the basis for the growth of wisdom of crowds.

Even though erroneous information may find its way into Wikipedia, inadvertently or deliberately, it will not survive for long because many diverse "Wikipedians" keep track of changes that are made in the entries. An examination of the lifespan of an error discovered in Wikipedia shows that most errors are deleted within minutes (Viegas, Wattenberg & Dave, 2004).

Furthermore, examination of the quality of Wikipedia's contents demonstrates the existence of a relationship between the number of co-authors of the entry and its quality. Featured articles are written by more authors than low-quality articles (Wilkinson & Huberman, 2007). Kittur et al. (2008) show that the quality of entries written is affected not only by the number of writers but also by the nature of their interaction. An increase in the number of Wikipedians behind a given article enhances the article's quality only if the Wikipedians communicate with each other, attain a consensus, and divide the labor. Therefore, the quality of contents in Wikipedia depends not only on the number of co-authors

but also on the existence of coordination mechanisms among them. Wikipedia provides such mechanisms, helping writers to improve their communication in order to assure the quality of the information produced (Rosenzweig, 2006; Goodwin, 2009).

Every article in Wikipedia has a 'talk page' that allows writers to discuss and the development of the writing of the entry. It is here that writers interact, iron out differences, and form consensuses. The extent of activity on Wikipedia talk pages has been rising steadily (Viegas et al., 2004), attesting to the importance that Wikipedians attributed to coordinating among themselves and the use they actually make of this medium to achieve this coordination.

Writing for Wikipedia is subject to rules that are generated amid discussion among writers. These rules commit writers to certain writing standards ("Wikipedia guidelines"), including a neutral point of view, verifiability, and "no original research " policy, which means that Wikipedia writers must avoid presentation of facts, allegations, and ideas for which no reliable, published sources exist—all of which to assure the quality of the writing and prevent biases in the contents presented.

Wikipedia uses far-reaching control and monitoring processes to maintain content quality, including the rating of writers and of pages (entries) by level of quality and presentation of this information to the reader (Rosenzweig, 2006; Goodwin, 2008). These measures ensure that even if inaccurate and/or unreliable information breaks in, the reader will be able to evaluate and relate to it. In extreme cases of deliberate vandalism, Wikipedia suspends and blocks writers to prevent deliberate impairment of content quality.

Additional elements contribute to the quality of contents in Wikipedia: the authors are not motivated by a quest for glory, since they are mostly anonymous; they have no profit motive; and they are devoted to their mission of providing the world with a quality encyclopedia (Goodwin, 2009). These factors have created a community of writers who collaborate to assure the quality of the encyclopedia and its contents. This community framework is the glue that binds the writers and steers them toward proper and desirable behavior in an environment that is not only an information environment but also, and mainly, a social one.

By tracking the factors that support the quality of the contents in Wikipedia, one may define Wikipedia as a reliable source even though the authoritativeness of its knowledge stems not from the level of its writers' knowledge but from the interaction and processes that take place among the writers. Wikipedia offers not only an alternative to traditional encyclopedias but also an alternative perspective on the authority of knowledge produced via collaborative and open processes. Thus, it is one of the most edifying examples of the existence of the wisdom of crowds.

Teachers' Attitudes toward the Use of Wikipedia

The debate over Wikipedia's reliability and trustworthiness for teaching and learning has stalked the 'free encyclopedia' from the dawn of its existence. The first opponents of the use of Wikipedia were academicians who considered it a blatant violation of the processes used to produce academic knowledge and a menace to the authority of such knowledge (Eijkman, 2010). In several cases, lecturers issued a ban on Wikipedia and prohibited its use by their students (Cohen, 2007; Waters, 2007).

In his book *The Cult of the Amateur*, Keen (2007) accuses Wikipedia and other Web 2.0 environments of fostering a culture of amateurism and offending the perception of the professionalism and authority of experts: "The professional is being replaced by the amateur, the lexicographer by the layperson, the Harvard professor by the unschooled populance" (p. 37). Wikipedia, Keen charges," …(is) raising up the amateur to a position of prominence

exceeding that of the salaried experts who do what they do for money" (p. 40). Wikipedia threatens the authority of academicians' knowledge as well as their livelihood. For this reason, many lecturers oppose it and do not recognize it as a reliable source of knowledge.

According to Jaschik (2007) academics oppose the use of Wikipedia for reasons related to the nature of academic. Ordinary encyclopedias are also considered inadequate sources for the writing of academic studies. At the most, they might serve as a point of departure for the onset of research into an unfamiliar topic. Explicitly, however, they cannot be a main source, let alone the exclusive source, of serious academic work (Rosenzweig, 2006). Academicians dispute the propriety of quoting Wikipedia in academic articles irrespective of teaching. An academic article, they say, is one that, apart from having been written by an individual who holds an official academic status, has undergone peer review and was found worthy of publication.

Although articles in Wikipedia go through a process that does not qualify as academic review, some academicians argue that texts in Wikipedia are the products of peer collaboration that is equivalent to peer review and constitutes a model that academia should adopt (Black, 2007).

Academicians need to know where they stand on Wikipedia and should make policy about it primarily because students consult Wikipedia and use it for scholastic purposes. Wikipedia's supreme accessibility makes it the first source that students turn to in their search for information (Head, 2010; Lim, 2009). Opponents of students' use of Wikipedia believe that students use it merely for convenience and that, in an academic context, quality should trump convenience.

Other lecturers worry about students' ability to evaluate the information that Wikipedia offers. In their opinion, the multiplicity of authors necessitates critical reading (Hogg, n.d.). Wikipedia does give readers tools with which they may evaluate the quality of the information that it provides, including the possibility of viewing the history of the entry, the number of Wikipedians who collaborated in writing the entry, and the timeliness and long-term durability of the entry. Wikipedia allows readers to access the discussion that accompanies the writing of the entry and lets them form an impression of disputed matters and proposals for revision that are accepted or rejected. The problem with this is that lecturers do not trust students' capacity to perform the necessary checks before they decide to rely on the contents. The result is an absurdity: lecturers admit to using Wikipedia as a source of information, trusting themselves and their capacity to be critical and evaluate the quality of the information that they harvest from this source. Conversely, they enjoin their students against using Wikipedia instead of training and teaching them how to use it wisely and responsibly (Dooley, 2010).

A study performed in Israel among school teachers yields more concerning findings than these. The teachers investigated in the study testified that, not knowing properly how to assess information in Wikipedia, they do not teach their students how to use it intelligently. In other words, they allow themselves to use Wikipedia but discourage their students from using it. Some even forbid its use (Allon & Bar-Ilan, 2012).

There is a fundamental difference between school teachers and university lecturers in their attitudes toward using Wikipedia for their own needs and allowing students to do the same. The argument against relying on an encyclopedic source that does not pass academic peer review is invalid in the context of a school. Encyclopedias are accepted sources of information in school-level learning; indeed, they join other sources of information that school students may use even if they fall short of the high standards of academic research. Therefore, opposition to the use of Wikipedia in this context cannot originate in the ostensibly inferior quality of Wikipedia's information; the only possible reason is concern about the source of authority of this knowledge.

Some teachers, instead of frowning on Wikipedia as an inferior knowledge resource, consider its use a learning opportunity. Wikipedia is an environment that welcomes the development of information evaluation skills that are foundational in the twenty-first century. As school children do not know how to evaluate information, it's reliability, accuracy, and source of authority (Gasser et al., 2012), Wikipedia is an excellent place to start imparting these skills. It welcomes the use of strategies to assess information, encourages critical thinking about how information is produced, and demonstrates the improvement that occurs in the very fact of collaboration and peer evaluation in the co-authorship of Wikipedia entries (Harouni, 2009). Wikipedia is a reflection and an example of the contribution of the collaborative process to learning and the construction of knowledge (Forte & Bruckman, 2006, 2007; Kissling 2011). Opposing it is like opposing the idea of collaborative learning itself. The education system, through the mediation of teachers, is in effect sending a double message: on the one hand, it encourages learning processes based on the construction of collaborative knowledge and the investigation and evaluation of knowledge; on the other hand, it forbids the use of Wikipedia as a source of information or allows its use without imparting the tools that are needed to assess it.

Previous studies have examined the use of Wikipedia by educators focused primarily on usage habits and attitudes of academics (Eijkman, 2010; Hsin-liang, 2010; Snyder, 2013a), or librarians (Synder, 2013b). Much less attention has been given to the way in which teachers in primary and secondary schools relate to use Wikipedia. Studies regarding the attitude of teachers toward Wikipedia were based largely on qualitative data only (Alon Bar-Ilan, 2012) or presented pedagogical models of use of Wikipedia among teachers (Forte & Bruckman, 2006, Forte & Brukman, 2007; Mahmud & Chin, 2013). Many have concentrated on the use of the Wiki platform, the platform Wikipedia is based on, as a collaborative writing platform (Achterman, 2006; Honegger, 2005; Schwartz et al. 2004; Parker & Chao, 2007; Meishar-Tal & Schencks, 2010; Meishar-Tal & Gorsky, 2010).

This study aims to shed light on teachers' usage of Wikipedia and the factors associated with it by using quantitative measures and examining the relationships between the attitudes of teachers towards the use of other measures such as Wikipedia perceptions, the quality of information, and the perception of the level of literacy of the students.

Research Questions

This study is focused on school teachers' attitude toward the use of Wikipedia and their actual use for personal needs and with students.

For this purpose, eight research questions were asked:

1. How do teachers percieve the acceptance of Wikipedia in terms of authoritativeness of knowledge and ease of use?
2. What is the teachers' attitude toward the use of Wikipedia in learning?
3. How do teachers use Wikipedia for personal needs?
4. How do teachers use Wikipedia with their students?
5. Is there a correlation between the use of Wikipedia by teachers with their students and their perception of the authority of knowledge in Wikipedia?
6. Is there a correlation between the teachers' use of Wikipedia for personal needs and their use of Wikipedia with their students?
7. Is there a correlation between the teachers' use of Wikipedia with their students and the characteristics of the teachers and the students?
8. What factors predict teachers' use of Wikipedia with their students?

Research Method

This study was designed in light of TAM (Technology Acceptance Model) Theory (Davis, 1989). TAM suggests that when users are presented with a new technology, three major factors influence their decision about whether and how they will use it: (1) External factors, e.g. personal characteristic and background of the user (2) Perceivied usefulness (3) Perceived ease of use. These three lead to the attitude toward the technology and the actual use of the technology.

Resting upon this model, the research was designed to reveal correlations between external factors related to the teachers and their students, to the teachers' perceptions of Wikipedia, to their attitudes toward the use of Wikipedia and their actual use (Figure 1). Usefulness of Wikipedia was measured in accordance to the perceived value of Wikipedia as an authorized source of knowledge.
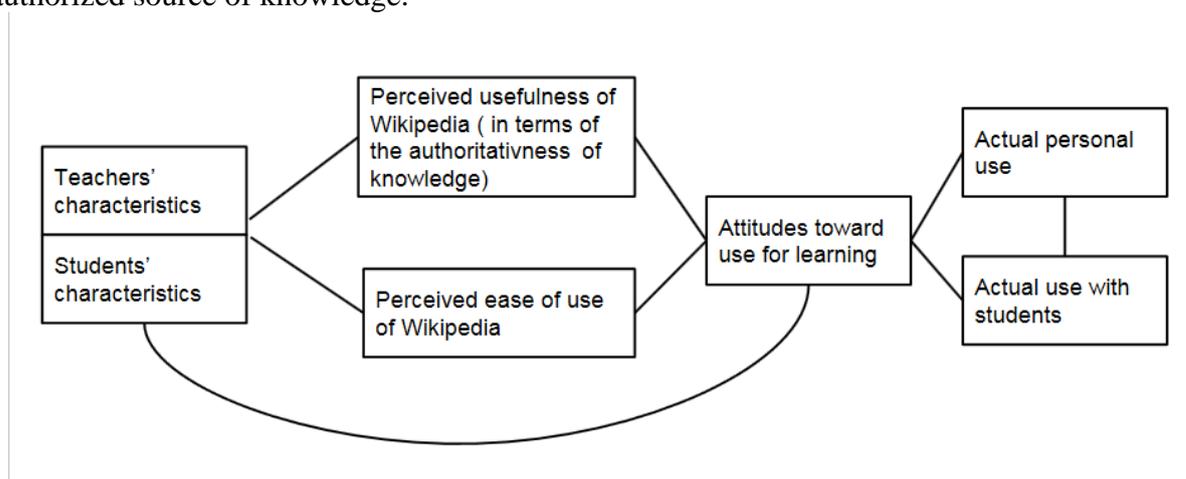

Figure 1: The Research model

The research tool was a questionnaire that focuses on teachers' uses of and attitudes toward Wikipedia. Most of the questionnaire was quantitative except one open question. The questionnaire contained four parts: questions related to the teachers' and their students' charachteristics, questions related to the perceived authoritativeness of knowledge and ease of use of Wikipedia, questions related to the attitude toward the use of Wikipedia for learning purposes and questions related to the actual Use of Wikipedia for personaluse and with students.

The questionnaire was distributed to in-service teachers' through various mediums: being published online in several Facebook groups for teachers and administered to teachers during professional development seminars. The results were statistically analyzed to reveal correlations among the variables.

Participants

Two hundred Primary and Secondary teachers, from the disciplines shown in Table 1, received the questionnaire anonymously. 132 returned completed questionnaires, including 11% men and 89% women.The average age was 45 years (ranging from 26 years to 67 years).

Thirty-four percent of the responders were college graduates; 65.3% have a master's degree and 0.7% held a doctorate. 48.7% teach in primary schools, 29.7% teach in middle schools and 21.6% teach in highschools. 86% were of the secular Jewish sector, 5.3% from a religious Jewish sector, 1.3% of the Arab Christian and 7.3% Muslim from the Arab sector. This is a representative sample of the various sectors of the Israeli educational system with a little over representation to the secular Jewish population. Teaching professions of respondents is presented it Table 1.

Teaching profession	Percent %
Computers & Mathematics	19.3
Special education	14.0
Languages	13.3
Humanities	12.7
Science	10.0
Education	8.7
Social science	8.0
Didn't report	6.7
Arts	3.3
English	2.0
Educational consult	1.3
Physical education	.7

Table 1. Teaching Profession of Respondents

The respondents' level of general digital literacy was calculated as the average of five statements that the respondents were asked to rank on a 5-points Likert scale ranging from 1-not literate to 5-highly literate. The results are presented in Table 2.

	Mean	Std. Deviation
Searching for online information	4.03	.79
Engaging students in online activities	3.40	1.07
Assessing online information	3.37	1.08
Processing online information	3.23	1.25
Distributing online information	2.94	1.27
Average	3.39	

Table 2. Personal Literacy of Respondents

Findings

Acceptance of Wikipedia

The acceptance of Wikipedia by the teachers was measured in terms of ease of use and usefulness.

The teachers ranked the ease of use of Wikipedia as High. They consider the information very handy (M=4.46; SD=.74) and very easy to understand (M=4.05; SD=.83). Nevertheless, they perceived its overall usefulness as medium (Table 3).

The open-ended questions reinforced these findings by indicating that the teachers' perceive Wikipedia as an unreliable source. They interpret the fact that Wikipedia is written by a 'crowd' and not by authoritative sources of knowledge as an impediment to the reliability and credibility of the open encyclopedia. Oblivious to the authoritativeness of knowledge that originates in the 'wisdom of crowds' (Surowiecki, 2004), they deem this knowledge unacceptable and unreliable.

	N	Mean	Std. Deviation
Overall usefulness	150	3.1544	.74613
Overall ease of use	149	4.2685	.71783

Table 3. Usefulness and ease of use of Wikipedia

Attitudes toward the Use of Wikipedia for Learning

The findings show that a large majority of teachers don't think Wikipedia should be forbidden for learning purposes. However, they rank Wikipedia as a valuable source of information only on a medium level. Therefore teachers don't encourage their students to use this environment (table 4).

	N	Mean	Std. Deviation
Wikipedia is a valid source for learning	148	3.3	1.00
Teachers should encourage their students to use Wikipedia for learning	146	3.2	1.02
Teachers should forbid the use of Wikipedia for learning purposes	148	1.7	1.05

Table 4. Attitudes toward the use of Wikipedia by students

Use of Wikipedia for Personal Needs

Frequency of visiting Wikipedia

The teachers were asked about the frequency of their visits to Wikipedia. Most respondents reported using Wikipedia at least once per month. More than 30 percent reported visiting at least once a week.

Range of uses

The respondents were also asked about the circumstances of their visits to Wikipedia. They were given a range of uses, from occasional needs (as a point of departure for the study of a new field) to formal and academic needs and were asked to rank the level of their use of Wikipedia in each situation (table 5).

	N	Mean	Std. Deviation
As a point for departure for studying new field	150	2.95	1.14
As a source for preparation of a lesson plan	150	2.41	1.01
As part of an inservice activity	149	2.35	1.05
As a source of writing an academic paper	133	1.84	.95

Table 5. Level of use of Wikipedia by Teachers for Personal Purposes

One may see that, generally speaking, Wikipedia is consulted to a medium to small extent across the range of uses. In other words, Wikipedia is used more as a source for occasional study than as a source for formal academic study.

Intensity of use

The respondents were asked about the actions they take while visiting Wikipedia. The possibilities ranged from "read entries" to "create new entries" (Table 6). The findings show that even when teachers consult Wikipedia, they use it superficially in the sense of consuming information only. The more a given activity demands initiative and the creation of information, the less Wikipedia is used. A significant difference was found between the mere reading of Wikipedia entries and the use of the other tools that Wikipedia provides for the evaluation of information, e.g. viewing the history of entries or examining the pages of those who participated in writing them.

	N	Mean	Std. Deviation
Read entries	149	2.87	1.10
View history of entry versions	149	1.90	1.05
Check editor pages	146	1.53	.83
Edit entries	148	1.36	.711
Create new entries	149	1.21	.68
Valid N (listwise)	144		

Table 6. Intensity of Use of Wikipedia

The findings suggest that the teachers may have only a superficial familiarity with Wikipedia and an impaired perception of the authoritativeness of its knowledge. The teachers do not use strategies to evaluate information by means of Wikipedia's tools and content themselves with merely reading. Therefore, their use of Wikipedia is not indicative of a full and thorough familiarity with the Wikipedia environment.

Actual Use with Students

The respondents were asked how they use Wikipedia with their students. The findings suggest that the teachers usually allow their student to use Wikipedia as a learning source but only rarely teach them how to use it properly by giving them tools to evaluate the information in Wikipedia (Table 7). Their reaction to Wikipedia use of students is more passive then active.

	N	Mean	Std. Deviation
I refer my students to Wikipedia as part of a learning assignment	147	2.401	1.06
I encourage my students to use Wikipedia	148	2.642	1.17
I teach my students how to evaluate information in Wikipedia	149	2.678	1.25
I allow my students to use Wikipedia as a source in their homework	148	3.088	1.12

Table 7. Actual use of Wikipedia with students

Correlation between the use of Wikipedia by teachers with their students and their perception of the authority of knowledge in Wikipedia

A correlation was sought between teachers' actual use of Wikipedia with students and their perception of ease of use and usefulness of Wikipedia (Table 8). Indeed, a positive correlation was found between perceptions of usefulness of information and use of Wikipedia with students ($r=.604$; $p<.01$) as well as a moderately strong positive correlation between perceptions of information quality and actual use of Wikipedia in teaching ($r=.444$; $p<.01$). Ease of use of Wikipedia was correlated to attitude toward use by students ($r=.195$; $p<0.05$). No correlation was found between ease of use of Wikipedia and the actual use of Wikipedia by teachers with their students. This findings indicate that the attitude of teachers toward Wikipedia mostly relate to their perception of usefulness of Wikipedia as an appropriate resource for learning.

	Attitude toward use by students	Actual use with students
Usefulness	.604**	.444**
Ease of use	.195*	.153

Table 8. Correlations among Perceptions of the usefulness of Wikipedia and ease of use, Attitudes toward Using Wikipedia by students, and actual Using Wikipedia with Students

Correlation between the teachers' use of Wikipedia for personal needs and their use of Wikipedia with their students

A correlation was sought between the teachers' use of Wikipedia for personal needs and their use of Wikipedia with their students (r= .573, p<0.01). This finding indicates that the more Wikipedia is used for personal needs the more the teachers are also using it for teaching purposes.

Correlation between the teachers' use of Wikipedia with their students and their personal characteristics and students' characteristics

Looking for correlations between teachers' use of Wikipedia with their students and their personal characteristics, the only correlation found was between the self reported information evaluation competencies of the teachers and their level of teaching their student to evaluate information in Wikipedia (r= .216 p<0.01) . Another correlation was found between the teacher competence in activating the students in on-line environments and the teaching of evaluation of information in Wikipedia (r=.202, p<0.05).

Differnces in teacher's use of Wikipedia were found in regard to age of their students and the grade of their class (Table 9).

Class level	N	Mean	Std. Deviation
Primary school (1-3 grade)	25	2.56	.81
Primary school (4-6 grade)	46	2.97	.901
Middle school	44	2.82	.930
High school	32	2.31	.73

Table 9. Differences in use of Wikipedia with students in terms of class level.

Teachers who teach in lower classes in primary schools use Wikipedia with their students less than teachers who teach in higher classes in primary schools. Teachers who teach in highschool also use Wikipedia with students less then teachers who teach in middle school (F(143,3)=4.22, P<0.01).

The reason probably lies is the teacher's perception of their students competence in evaluating information. Teachers of lower classes in primary school express lower confident in their students' ability to evaluate information from the web. Highschool teachers also express lower confidence in their students' competence in evaluating information (Table 10). One way anova reveals a significant difference in the perception of competence of students among teachers (F(140,3)=6.88, p<0.001)

	N	Mean	Std. Deviation
Primary school (1-3 grade)	25	1.9600	.74889
Primary school (4-6 grade)	46	2.8043	.79567
Middle school	44	2.7973	.85219
High school	29	2.5690	.86576

Table 10. Differences in perception of students' competence in evaluating information (Digital literacy)

Predictors of Use of Wikipedia with Students

To test for the existence of predictors of Wikipedia use with students, a multiple regression analysis was performed. The predictors tested were personal use, attitudes toward use, frequency of use, perception of information quality, and perception of students' literacy. A multiple correlation ($r=.66$; $p<.01$) was found between use in teaching and all the predictors. The predictive power of each predictor is shown in Table 11.

Predictor	Beta	t	Significance
Range of personal use	.36	4.29	.001
Attitudes toward use by students	.31	3.60	.001
Frequency of use	.05	.65	Insig.
Quality of information	.05	.66	Insig.
Students' literacy	.004	.06	Insig.

Table 11. Predictors of Extent of Wikipedia Use for Teaching Purposes (with Students)

The findings show that two predictors are significantly related to teachers' use of Wikipedia with students. The more broadly and intensively Wikipedia is used by the teacher, the more strongly this predicts its use with students; the same is found about attitudes toward the use of Wikipedia for learning purposes. The stronger the general attitudes toward the importance of using Wikipedia in learning are, the more Wikipedia is used with students. By implication, if there is an interest in changing the status quo and encouraging teachers to use Wikipedia with their students, action to change teachers' attitudes toward Wikipedia should be taken. That is, teachers should be more aware of the essentials of wisdom of crowds and informed about the mechanisms that Wikipedia uses to assure the quality of its information.

Discussion

This study probed the attitudes and characteristics of teachers' use of Wikipedia for personal and teaching purposes and examined the relation between the characteristics of their Wikipedia use and factors related to their perception of the quality of the information found on Wikipedia.

The findings on teachers' perceptions of the authoritativeness of knowledge in Wikipedia show that teachers perceive Wikipedia as an environment of medium and submedium reliability, accuracy, and timeliness. A large proportion of teachers consider Wikipedia an unreliable source. The teachers interpret the nature of writing in Wikipedia—by a 'crowd' and not by an authoritative source of knowledge—as an impediment to the credibility and reliability of the open encyclopedia. Large shares of teachers are unaware of the strength of the authoritativeness of knowledge generated by the 'wisdom of crowds' (Surowiecki, 2004) and interpret such knowledge as unacceptable and unreliable. Even teachers who are aware of the phenomenon find it hard to accept and feel that they lack the tools to evaluate information in this environment.

The findings of this study show that teachers make middle to low use of Wikipedia for their personal needs. Previous studies, in contrast, report that teachers use Wikipedia extensively for personal needs but forbid their students to use it (Eijkman, 2010). In the present study, teachers reported that they consult Wikipedia mainly (but only to a medium extent) as a point of departure for the study of a new field and to a small extent for formal in-service or academic study. They reported the same in regard to other sources. Teachers consulted Wikipedia less than they did educational sources. However, when asked about the frequency of their visits to Wikipedia, more than 30 percent of the teachers reported visiting at least once per week, a frequency considered intensive, and a majority of respondents

reported visiting at least once a month, a frequency considered indicative of medium to intensive use. This raises a question mark about the reliability of teachers' self-reportage on the extent of their use of Wikipedia. The teachers may have claimed meager use of Wikipedia for personal needs due to poor regard for the quality of the information in Wikipedia; it may also be the outgrowth of social desirability: they were loath to be 'caught in the act' and did not wish to admit that they use Wikipedia more than they think they should.

Even when the teachers did consult Wikipedia, they used it mainly to read information. They seldom used the tools that Wikipedia offers for the evaluation of information, e.g., studying the history of the entries they read and reviewing 'talk' pages and contributors' pages. Active participation in writing Wikipedia entries was especially infrequent. This may indicate an inadequate familiarity with Wikipedia that impairs their perception of the authoritativeness of the knowledge in this encyclopedia. Teachers do not use the Wikipedia toolkit to devise strategies for the evaluation of information. Strategies for the cross-referencing of information are used but some teachers who use them (both proponents and opponents of Wikipedia use) base their opinion of Wikipedia on misconceptions, even though Wikipedia provides additional tools that many bolster users' confidence in the quality of its information.

Apart from the characteristics of the teachers' own use of Wikipedia, their perceptions of their students' use were examined. The findings indicate that only a minority of teachers forbid the use of Wikipedia, corroborating Alon and Bar-Ilan (2012). Although most teachers do not ban the use of Wikipedia by their students, their medium-to-low regard for Wikipedia as a valuable source of information projects onto the way they relate to their students' use of this instrument. They neither refer students to Wikipedia nor actively encourage them to use it. They do, however, accept assignments based on Wikipedia, indicating passive consent to the use of Wikipedia instead of an effort to impart tools for the evaluation of the encyclopedia's information. If teachers were to receive training in the tools that Wikipedia gives its users for the evaluation of its information, they might change their minds about students' use of Wikipedia, impart tools for the intelligent consumption of Wikipedia information, and develop tailored strategies for the evaluation of information from this resource.

A positive point illuminated by the findings is that the predictors of teachers' use of Wikipedia with students are related to teachers' perceptions of Wikipedia use for teaching purposes. The stronger the general attitudes toward the importance of using Wikipedia for learning are, the more this source is actually used by students. By implication, if one is interested in changing the status quo and encouraging teachers to use Wikipedia with their students, one should raise teachers' awareness of the essentials of wisdom of crowds the mechanisms that Wikipedia uses to assure the quality of its information.

Conclusion

The situation arising from this study on the way teachers use Wikipedia, for both personal and teaching purposes; reveal gaps in knowledge of and familiarity with Wikipedia and underutilization of this resource for learning and teaching. Learning in the Wikipedia environment may create an opportunity for the acquisition of skills in the evaluation and consumption of online information. It urges learners to invoke strategies for the evaluation of information and critical thinking about the processes in which information is produced. Teachers should become better acquainted with Wikipedia than the respondents in this study were, and should take a more active approach toward training students in the intelligent use of this tool.

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