Added title page: Information literacy of high school students in Israel : a case study / Sharon Greenberg

Abstract

Background

Information literacy is the capability of an individual to meet their own informational needs. It varies from person to person and is contingent on numerous variables. Research has demonstrated that individuals with deficient information literacy levels are less likely to be employed full-time, tend to earn lower wages compared to those proficient in information literacy skills, participate less in civic activities such as voting and volunteering, and are more prone to disregard life-saving information.

Historically, studies focused on the accessibility of the Internet to youth and young adults. However, in an era where Internet access is almost universal in the western world, experts suggest a paradigm shift towards the utilization of online information by these demographics. Teenagers encounter a vast array of information sources online, many of which are dubious and may contain incorrect, false, or manipulative content. Proficiency in information literacy is crucial for them to search, evaluate, and effectively utilize information, enabling them to make enlightened choices, navigate the digital realm safely and ethically, and embrace the principles of digital citizenship—the responsible use of digital technology and adherence to ethical conduct online.

This study aims to thoroughly evaluate the information literacy levels of Israeli youth and their perceptions related to digital navigation, content evaluation, and the judicious use of Internet resources to mitigate social, financial, or physical risks. Information literacy was assessed across various domains: quantitative-financial literacy, scientific literacy, health literacy, and media literacy, taking into account the students' attributes: gender, socio-economic status, self-efficacy, and parental education. The premise is that their current information literacy and autonomy could support their future endeavors post-high school—in the military, higher education, and career pursuits. Additionally, the study explores the attitudes and perceptions of the students' teachers regarding their own and their students' information literacy.

Library of Information Science
Bar-Ilan University, Ramat-Gan, Israel
Email: Ruthi.Tshop@biu.ac.il

הספריה למדעי המידע
אוניברסיטת בר-אילן, רמת גן 5290002
טלי .Tel 972-3-5318163

Data collection for this study was conducted in 2019. However, during the writing process from 2020 to 2023, two significant global events occurred that highlighted the importance of information literacy: the COVID-19 pandemic and the widespread release of artificial intelligence engines to the public. The outcomes of this study offer insight into the information literacy of Israeli high school students on the cusp of these transformative events, and reflect their competencies and adaptability in an evolving information landscape.

The research method

The research adopted a "case study" methodology, employing "mixed methods" that integrate quantitative and qualitative research approaches. Participants comprised students and teachers from two high schools—one situated in a high socioeconomic status area and the other in a medium socioeconomic status area. In both institutions, laptops have been integral to learning and teaching for several years, and each had implemented the national ICT program approximately a decade prior to this study.

A total of 114 students contributed to the quantitative segment, completing questionnaires and engaging in computerized tasks. The questionnaires aimed to gauge students' self-efficacy within the context of information literacy, their Internet knowledge, and their usage patterns of various digital tools. The tasks were designed to test the different types of literacy in terms of identifying the need for information, searching, evaluating, and utilizing information, with the goal of charting the students' proficiency in financial, scientific, health, and media literacy.

For the qualitative component, ten students from each school were selected for semi-structured, in-depth interviews to gain a comprehensive understanding of their attitudes, methodologies, and feelings towards information literacy. This included their experiences while performing tasks and their broader perspective on the significance of information literacy in their lives.

The teaching staff's involvement was restricted to the qualitative portion of the research, aimed at illuminating phenomena identified in other parts of the study.

Main research findings

The questionnaire analysis indicated that students from the periphery exhibited higher self-efficacy compared to those from the central regions, while the central students displayed more extensive theoretical knowledge about the Internet. Gender-based analysis showed that boys had higher self-efficacy and more Internet-related knowledge than girls.

The investigation into usage habits uncovered a clear distinction between central and peripheral students: central students spent more time on computers, whereas peripheral students used mobile phones more frequently. Additionally, boys tended to use computers for longer durations, predominantly for gaming, while girls used mobile phones more, mainly for Instagram. The disparity in device usage is partly due to accessibility, influenced by socioeconomic status. Boys from higher socioeconomic backgrounds, having access to both desktop computers and mobile phones, favor computers for gaming purposes. In contrast, peripheral students often only have access to mobile phones.

Interviews elucidated a significant difference in usage nature: girls from both schools were actively engaged in social networks, which typically encourage positive and inclusive behavior, while boys primarily engaged in often violent computer games and passive consumption of YouTube content.

Considering these findings, it is advisable to tailor learning programs to students' varied preferences. Given that boys prefer video-based information consumption and girls dedicate substantial time to image-based applications, educational content should be developed to cater to both videos and images, following the principle of "educate the boy according to his way." Furthermore, creating more learning content for smartphones, which are universally accessible and favored by girls, is recommended. Alternatively, developing content compatible with both desktop computers and smartphones would allow students to choose their preferred platform.

Task performance analysis revealed that students from the periphery generally outperformed their central counterparts, suggesting a higher level of information literacy—a finding that contrasts with previous studies. This suggests that peripheral students, despite using less advanced devices, have sufficient Internet access and time to improve their information literacy, potentially diminishing the impact of socioeconomic background on self-efficacy and enhancing their future prospects.

The financial literacy task, involving a simulated purchase of sunglasses online, was the sole task where central students outperformed peripheral students, aligning with earlier research. Interviews showed that students from both regions had experience with online purchases and exhibited high consumer awareness, often employing English in these transactions. Notably, proficiency in the financial literacy task correlated with overall information literacy. Since financial literacy is a malleable skill, curricular developments to enhance students' financial knowledge, particularly in peripheral areas, are recommended. Improving financial literacy, and

by extension information literacy, among peripheral students is feasible and may broaden their employment opportunities and access to rewarding jobs in the future.

In the scientific literacy task, which involved searching for and understanding scientific information, no socio-economic differences were observed. Gender differences were notable, with boys outperforming girls. This may be attributed to the girls' inclination for thoroughness and depth, traits suggested by previous studies to be typically female. The task's initial search result was a Wikipedia entry that contained the answer, which might not have satisfied the girls, given that schools generally do not regard Wikipedia as an authoritative source and often advise against using it or suggest corroborating it with additional sources. Many students, however, favored Wikipedia for its convenience and comprehensive information. This dichotomy between student preferences and educational guidance indicates a need for the education system to reassess its stance on information sources in light of technological advancements and information overload.

In the health literacy task, peripheral students outperformed central students in online searches for health solutions, a significant result given that lower socio-economic groups usually demonstrate lower levels of health literacy. It is crucial to cultivate and improve this literacy among students, particularly as girls and boys from peripheral areas, due to their environment, are more exposed to adverse health behaviors. Health literacy can potentially mitigate these effects. The interviews highlighted a common concern across age and gender: cyberchondria, where excessive exposure to medical information leads to undue panic. Teaching health literacy, especially the skill of evaluating information, can reduce unnecessary medical expenses for individuals and the state, and prevent harm to mental and physical health.

In the media literacy task, which required navigating a virtual museum to locate a specific artwork, peripheral students again performed better than central students, contradicting the usual findings that link higher socio-economic status to better results. The tasks and interviews revealed another literacy type present in students' lives: map literacy. Although acquired outside of school, map literacy is essential for everyday life navigation using digital maps and understanding information from infographics, a skill increasingly important in managing information overload. Thus, incorporating map literacy in various subjects like history, geography, and others is recommended.

A notable discovery was the discrepancy between the students' high self-efficacy and their actual information literacy levels, a gap that has been recognized in prior studies. Students

acknowledged during interviews that their task performance revealed an overestimation of their information literacy skills. This gap was more pronounced in boys, though a positive correlation was found between self-efficacy and information literacy. The findings support the continuous development of students' self-efficacy and information literacy, as self-efficacy is closely linked to achievement.

The research also highlighted a significant influence of parental involvement on children's information literacy, which was evident in both the quantitative data and interviews. Contrary to the assertion regarding low socio-economic students lacking ICT guidance at home, the students credited their parents as their primary internet mentors and support system. This underscores the importance of enhancing parents' information literacy to aid both traditional academic and lifelong learning.

In the interviews with students and teachers, a deeper exploration into habits and proficiencies concerning two central information literacy skills—information search and evaluation—was undertaken. Most students initiate their information searches on Google or a preferred social network, typically using English search terms. Both teachers and the majority of students favor Google as their starting point and often feel content with the results displayed on the first page. Further investigation into the search process revealed differences attributed to gender and age. Teachers generally transition from Google to websites they deem credible, whereas students are more inclined to turn to social networks. The social networks chosen for information searches also diverged along gender lines – boys favored YouTube, while girls preferred Instagram. This preference aligns with observations in the teaching staff, where preferences and patterns of social media use transcended generational divides, echoing the trends reported in previous research, particularly the prominence of Instagram among women and girls.

Students reported self-sourcing the bulk of their knowledge and, when assistance is required, primarily seeking help from parents and peers, resorting to teachers only as a last option. However, interviews suggested that teachers exhibit greater experience and prudence in information evaluation, exercising more critical thinking and skepticism, even with sources considered trustworthy. Teachers' engagement with social networks remains limited, often restricted to professional updates and family interactions. Thus, enhancing teachers' search skills and their proficiency in social media is critical, as it is vital for them to understand the platforms where students are active and to support them in information location and evaluation. Additionally, advancing teachers' professional development to equip them with lifelong learning tools, especially concerning new technologies and their integration, is essential.

The findings underscore the significance of continual learning for both students and teachers. With rapid technological advancements, the ability to swiftly adapt and acquire new skills becomes indispensable. The educational system should prioritize nurturing critical thinking, promoting growth, and instilling a passion for lifelong learning in students. Concurrently, teachers must evolve beyond being mere purveyors of knowledge to become mentors who guide students through the digital terrain, helping them to discern between digital content types and to analyze and synthesize information effectively. Notably, students demonstrated considerable dedication and enthusiasm for the performance tasks, signifying that novel and challenging activities, distinct from routine learning, are crucial for engaging and motivating students. Therefore, it is imperative to develop compelling educational activities that spark and sustain student interest.

In summary, the digital realm presents both an expansive repository of knowledge and a labyrinth of misinformation. It is incumbent upon the educational system, along with teachers and parents, to furnish students with the necessary tools and mindset to navigate this domain proficiently.

The importance of the research and its contribution

The present study explored various facets of information literacy, including its acquisition, diversity, self-efficacy, motivation, and informational behaviors. This research contributes to a deeper understanding of information literacy and its implications, offering valuable insights for policy formulation and the advancement of educational practices.

A key discovery of this research is the elucidation of the roles various factors play in the acquisition of information literacy: parental influence, educational institutions, and individual inquiry. It underscores the pivotal role parents play in nurturing information literacy in their children, independent of socioeconomic status. The findings emphasize the need for parent engagement in enhancing their children′s information literacy and savvy internet use. Educators and policymakers should acknowledge this dynamic, emphasizing strategies that promote active parental involvement in their children's educational journey, while bolstering information literacy skills.

Furthermore, the study showcases the potential of schools and the education system at large in imparting information literacy. It highlights the ability of educational establishments to significantly enhance students' information literacy skills by developing materials that cater to students′ preferences and consumption habits, incorporating information literacy into curricula,

and offering guidance and support. Educational institutions are urged to prioritize information literacy instruction and arm teachers with necessary training and resources to impart these competencies and effectively assess student proficiency.

Self-directed and lifelong learning have emerged as key and effective learning approaches for both students and teachers in mastering information literacy and acquiring additional knowledge and skills. This insight lays a robust foundation for intelligent development of information literacy capabilities. For instance, educators can foster student autonomy in learning by facilitating self-guided learning opportunities and instructing efficient search and evaluation methods.

The research outcomes have direct implications for educators, policymakers, and healthcare practitioners. Primarily, it accentuates the criticality of parental involvement in cultivating information literacy abilities. Hence, educators could partner with parents to guide responsible internet use, critical information evaluation, and digital media literacy. Policymakers could champion initiatives that empower parents in their children's educational experiences and provide at-home resources to foster information literacy. Additionally, the insights on health literacy underscore the necessity for tailored interventions to bridge health information disparities. Policymakers and health professionals could devise programs ensuring equitable access to precise health information and aiding users in navigating the intricate healthcare environment, along with enhancing critical appraisal skills and enabling informed health decisions.

Regarding scientific literacy, the research advocates for educational methods that address gender disparities and encourage girls' participation and information evaluation in scientific endeavors. Educators could create inclusive, inquiry-based learning experiences that bolster self-efficacy and scientific literacy across the student body.

Lastly, the findings related to motivation and information behavior can inform the development of pedagogical methods that stress the value of engaging learning atmospheres and the teaching of critical assessment techniques. Educators can weave information literacy instruction throughout the curriculum, endow students with the skills to seek information, and provide continuous support and guidance

MMS Number 9927029105805776