Fake news judgement

The case of undergraduate students at Notre Dame University-Louaize, Lebanon

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Abstract

Purpose – The purpose of this paper is to provide library professionals with insights into students' fake news judgment and the importance of teaching media and information literacy, not as an option but as a core educational requirement.

Design/methodology/approach – Qualtrics was used to collect the study data. Students completed a set of tasks designed in the form of a survey that entailed verifying whether news, stories, images and news sources were real, fake, dubious or trustworthy. Statistical tests were used to asses whether their responses depended on criteria, such as faculty and gender.

Findings – No significant relationship exists between the students' responses and variables, such as gender, student category, fact-checking and source of information. The findings reveal that students' ability to identify the authoritativeness of information is dependent on the faculty in which they are enrolled.

Originality/value – This paper reports the first known attempt in Lebanon to measure students' ability in distinguishing fake from real news. The results of this paper can be used by library professionals, particularly in Lebanon, to convey the importance of teaching and embedding media and information literacy into their curriculum.

Keywords Information literacy, Misinformation, Disinformation, Lebanon, Media literacy, Fake news

Paper type Research paper

The spread of fake news over the Web may have a great impact not only on teenagers but also on adults alike. Though it is not merely the social media's responsibility in the dissemination of fake news, they are still considered partners in crime when it comes to filtering out or promoting news and stories through their newsfeeds. Potter (2016) discussed the way social media websites affect our minds and our inner spam filter. The author noted that under the claim of "personalizing" our searches and online experiences, social media websites control our filtering process; thus, determining what we see and what we do not get to see. Social media websites may not be encouraging people to believe the information being disseminated, but it is the people's tendency to believe any information they find on the Web without any dose of skepticism. Fake news spreads faster than real news, according to a recent BuzzFeed analysis (Silverman, 2016). Regardless of its influence on the targeted audience, the fact that a fake story goes viral, the publisher of the original story may gain money from the ads that show on the story page or may achieve a hidden agenda or a conspiracy theory. Fake news websites often masquerade as credible news websites. Therefore, fake news can be tempting and deceptive, which drives people to share them across multiple social media platforms. As a result, harm can be caused, especially when fake news is disconnected from the original sources or context (Conroy *et al.*, 2015). Social media platforms, search engines and other websites are not the sole responsible of the dissemination of such information. However, their responsibility should not be underestimated. Some websites, including social media platforms, already started taking certain steps to help in the fight against the fake news and false information phenomenon whether through banning fake news websites from making money from ads on their fake pages or through amending their algorithmic structure to filter out fake news. For instance, Facebook, the social media giant, has announced a renewed war on fake news through an amended search algorithm (Calfas, 2017).

Libraries and librarians play a major role in the battle against fake news. Information consumers, especially students, may be tech, internet or social media savvy, but their ability to assess information and identify fake, inaccurate, deceptive or biased sources remains questioned. This population may be easily deceived and tricked by phony news and stories making it difficult for them to identify. The role of librarians and information professionals is to develop well-educated information consumers. To achieve this, they must go beyond being neutral information providers and educate people that "intellectual freedom should not mean the freedom to believe nonsense, but only read it" (Bivens-Tatum, 2012, p. 187).

This study investigates the undergraduate students' skills at Notre Dame University–Louaize (NDU), Lebanon, in identifying fake news. It also explores whether any relationship exists between students' answers and other variables, such as gender, student category, fact-checking and source of information. The study outlines the primary means that students use to consume and share information and the likelihood to check whether a story or news that they came across is real or fake before sharing it. The results of this study will provide valuable information for library decision-makers regarding the importance of teaching media and information literacy as a core educational requirement.

Literature review
Much has been written about fake news; however, there exist a limited library and information science scholarly and peer-reviewed literature on the topic. The reviewed literature is used to frame the topic of fake news in the internet and social media age and to shed light on students' skills, the role of librarians in the battle against fake news and the importance of media and information literacy in promoting critical thinking in Lebanon.

Internet, social media and information
Many studies reported the importance of the internet, social media and user-generated content. Chayko (2017) commented that due to the internet and other digital and mobile technologies, users could generate and distribute content to a wider audience in literarily no time. Whether companies, organizations, governments, actors, activists, politicians or athletes, they all produce and distribute content that serve their own agendas. The internet and social media provide significant advantage to disseminate and manipulate information, which sometimes makes it hard for rebelling voices to be heard (Cottle, 2006). Because of the internet and social media, news travels extremely fast. The increasingly connected world made all news information and news sources to have a high, if not the highest speed rate and widest reach than ever before. Salvania and Pabico (2010) assured that news and the way information spread over social media networks emerged as an integral part of our lives were people are now dependent on news for timely decision-making. However, Alexander and Hanson (2017) questioned whether people are better-informed in the information society and provided opposing viewpoints on the topic. Their question lead to reconsider whether the advancement of technologies and the speed in getting news information would result in better-informed people, or information consumers need to be vigilant and have a certain level of skepticism? Being vigilant and skeptical is essential as long as it is not unreasonably practiced. In talking about the ins and outs of skepticism, Batchelor (2017) indicated that excessive skepticism may result in people avoid truth and even denying the authenticity and accuracy of reliable sources.

The role of social media websites in determining what we see and what we do not get to see is extremely important (Potter, 2016). Schifferes *et al.* (2014) noted that, as social media has become a primary source of news, fears about the reliability of information found on websites, such as Twitter and Facebook increase (p. 406). This was supported by Bessi (2017) who declared that social media continues to contribute to the rapid dissemination of user-generated information, which includes hoaxes, false claims, fabricated news and conspiracy theories. Lee and Ma (2012) consider social media platforms as extremely powerful tools that allow individuals to consume and share information around the world within minutes. With the rapid advancement of technology and the internet, information is being brought to users' social media platforms or news feeds through sophisticated algorithms based on things that the system thinks they like (Potter, 2016), thus directing our limiting user choices. Such algorithmic structure can suggest, predict or filter information based on the users' preference, creating an echo chamber that may be appealing to them or confirm their pre-existing beliefs. The findings of Flaxman *et al.* (2016) suggest that individuals tend to read news that are ideologically similar and that almost all social network users exist in the so-called echo chambers. This phenomenon is referred to as social homogeneity, which is the primary driver of the creation of echo chambers and content diffusion (Del Vicario *et al.*, 2016). According to Marchi (2012), teens are now more connected to social networks than ever before, and they get their news from friends and family members in their social media networks, by this they are neglecting objective news and preferring the opinionated ones.

Fake news: misinformation and disinformation
Fake news may be created, published and shared for many reasons, such as entertainment, influencing public opinion and advertising revenue. Conroy *et al.* (2015) identified three broad types of fake information, namely, serious fabrications, large-scale hoaxes and humorous fakes, each having a different intention from the other. In this context, the term misinformation refers to information that is not true or inaccurate, which may sometimes be

produced as honest mistakes (Walsh, 2010). Honest mistakes may include false information being shared by real journalists or credible mainstream media outlets, which give them the sense of authenticity (Schifferes *et al.*, 2014) that eventually mislead people. Hao and Li (2013, p. 257) described misinformation as "the idea that a sender can potentially misinform the receiver by manipulating the way the latter interprets the realization of an information structure features naturally in other setting". On the other hand, individuals, institutions, shadowy government agencies, government agents or foreign powers that deliberately mislead information consumers for their evil intentions, such as influencing public opinion or policies in a way that meets a purpose (Fetzer, 2004), can generate disinformation. Disinformation can cause direct or indirect harm on those who consume it. Fallis (2015, p. 402) stated that:

> In the same way that acts of terrorism tend to be more troubling than natural disasters, disinformation is a particularly problematic form of misinformation because it is no accident that people are misled.

Fake news may emerge repeatedly under the right conditions (Chen *et al.*, 2015) especially when people tend to share what has been posted by their social media networks without questioning their accuracy. Chen *et al.* (2015) found that the top reasons that motivate people to share information over social media websites were non-informational including sharing information for fun or information that they find interesting. Mintz (2012, p. 2) suggested that social media users "have to be the curators of their own friends and make informed judgments about which messages to reply to and which links to click on", otherwise, if they do not spot real from fake information, they will face the consequences.

Dubious or fake news sources may look and feel like real newspapers websites, which often trick people. During the 2016 presidential elections in the USA, the US National Public Radio (NPR) tracked down a fake news creator who was behind a story that got masses of traffic and shares over many websites, to investigate the motives and intentions behind creating fake stories (Sydell, 2016). According to Sydell (2016), the website creator admitted that he could make between US$10,000 and US$30,000 per month from ads and traffic on the websites. Even though some fake news creators spread news for money purposes, the intentions of others may be wilier than making profit and therefore may be more influential in shaping public opinion. Seemingly, as noted by Bessi (2017), fake and intentionally fabricated news receive a significant attention and interaction on social media than real news.

Students' skills and the role of librarians
When evaluating information, especially information retrieved from the internet, many students tend to believe that they are adept, while the truth speaks otherwise. In assessing students' information literacy skills, Wang (2007) found that students were overconfident about their ability to judge the credibility of information, possibly because of their technological skills and their ability to operate in a web environment. Wang noted that "students had unrealistic assumptions about their information literacy skills", and they thought they know more than they actually did (2007, p. 598). The results of a recent large-scale study conducted by Stanford University between January 2015 and June 2016 on 7,804 students in middle schools and colleges showed that more than 80 per cent of students could not distinguish a native advertisement labeled "sponsored content" from a real news story. Moreover, the report showed that some students knew that it was a sponsored content, yet they believed that it was a real news article, which indicates a need to explicitly teach students about such content in elementary schools. The library and information science

literature highlighted the evolving nature of the library science profession and the importance of information verification in the age of fake news (Frederiksen, 2017). Ayre (2016) noted that librarians need to be actively engaged in activities such as teaching media literacy skills and facilitating community conversations that result in more informed citizenry. The literature also emphasized the role of information professionals in the battle against fake news and how their role is redefining itself to embrace aspects that were once considered to be primarily journalistic activities, such as fact-checking. Loertscher (2017) postulated that because of the rise of fake news unsubstantiated claims, and alternative truths, librarians are challenged to teach students ways to identify authoritative sources of information, especially that people seem to believe whatever they read on social media website. Librarians strive to teach students information, media and digital literacy to make them savvier when it comes to critically consuming information. Walsh (2010) asserted that librarians are still the answer to teach students how to identify the reliability of information, but the traditional information literacy instruction should be redesigned to include additional reliable accuracy indicators that ensure controlling disinformation consumption. In 2011, Julien and Genuis (2011) noted that information literacy is an integral aspect of librarians' work. However, challenges and barriers over which librarians have limited or no control still exist.

Media and information literacy in Lebanon
While countries such as the Latvian Ministry of Culture countries started revisiting the curriculum to include media literacy across schools and universities (Selvidge, 2017), many universities in Lebanon still do not teach information or media literacy. On the other hand, some universities only provide one-shot instruction during orientation, which proved to be not the most effective teaching method (Mery *et al.*, 2012; Yearwood *et al.*, 2015). In 2016, Magda Abu-Fadil, Director of Media Unlimited in Lebanon indicated that now is the best time to promote and teach Media and Information Literacy (MIL) in the Middle East and North Africa region especially that to most of the countries in these states, the notion of MIL is still in its infancy. Abu-Fadil discussed how people do not take the time to analyze and question the authority and credibility of news and information prior to digesting and sharing them with others. She provided an example when a reputable Lebanese newspaper reported the death of Robbin Williams along with a fake photo that shows the marks of the belt with which he hanged himself.

Lebanese media consumers, particularly youth, tend to absorb information from media outlets that are in harmony with their ideologies and affiliations, and according to Melki (2010, 2013), their lack of critical media literacy helps perpetuate the problem. Abu-Fadil *et al.* (2016) postulated that the young generation in Lebanon tends to be passive in their critical thinking in schools that follow the French and Arabic system of education. As for students in schools that follow the British and American education system, Abu-Fadil noted that they sometimes failed to apply their effective learning and questioning strategies. Copeland (2016) opined that the notion of media literacy has moved beyond traditional classrooms to reach to people of all ages and that media literacy has shifted from its homeland in Western countries to different parts of the world. In Lebanon, many challenges exist when it comes to teaching media literacy or implementing it in academia, despite initiatives from universities, or from civil society groups, which sometimes overlook teaching critical competencies and focus more on digital literacy (Melki, 2013), which does not necessarily reinforce media and information consumer's critical skills and their ability to judge and distinguish real from fake information.

Summary of literature

The reviewed literature revealed the importance of social media in fast dissemination of information, regardless of credibility. Also, the literature touched upon the types of fake news, which included serious fabrications, large-scale hoaxes and humorous fakes, and the reasons behind creating and disseminating fake news. Further, the reviewed literature explored the students' skills in evaluating information and the role of librarians in equipping students with the necessary skills to survive in the information age. Finally, the notion of media and information literacy in Lebanon was discussed to show that this field is still relatively new, and that there exist many obstacles when it comes to teaching it in classrooms.

Significance of the study

This study will contribute to the literature on Lebanese students' adeptness in evaluating the authoritativeness of news and information and will also help library decision makers in Lebanon to make informed decisions when it comes to teaching media and information literacy as core educational requirement.

Methods

A set of tasks were sent out by email to all undergraduate students registered in spring 2017 at Notre Dame University- Louaize (NDU), Lebanon, in the form of a survey using Qualtrics, after obtaining the approval of the Office of Institutional and Research Assessment, the Office of Research and Graduate Studies, and the Vice-President for Academic Affairs. Participation in the study was voluntary and did not involve financial remuneration. Data were entered, edited and analyzed using IBM SPSS Data editor. Descriptive statistics were used to describe and present each variable in the study. Independent sample t-test was used for comparison between sex and the mean number of correct answers related to the images, stories and articles from one end and the correct answers of news sources from the other. One-way analysis of variance (ANOVA) was used to compare the correct answers related to the images, stories and articles and correct answers of news sources between faculties, level of trust in internet information and whether students check the authoritativeness of information before sharing it with others. Finally, chi-square test was used to assess the independency among the variables under study.

Note

The terms "faculty" or "faculties" used in this paper is to describe the different university schools at Notre Dame University-Louaize.

Survey information

The tasks were divided into three parts, which included:

 (1) collecting personal information and preferences, such as information that pertains to their primary source of news as well as their likelihood to fact-check news and stories before sharing them with friends;

 (2) verifying whether information, which includes images, articles and stories is real or fake; and

 (3) verifying the authoritativeness of information sources; fake images, news and stories were selected under the broad types of fake information identified by Conroy *et al.* (2015), which included serious fabrications, large-scale hoaxes and humorous fakes.

(*The description of the tasks and their answers are included in the* Appendix.)

Results

The characteristics of respondents included (41 per cent) females, and (59 per cent) males representing seven faculties:

(1) Faculty of Business Administration & Economics (FBAE);
(2) Faculty of Engineering (FE);
(3) Faculty of Humanities (FH);
(4) Faculty of Law & Political Science (FLPS);
(5) Faculty of Natural & Applied Sciences (FNAS);
(6) Faculty of Nursing & Health Sciences (FNHS); and
(7) Ramez G. Chagoury Faculty of Architecture Art & Design (FAAD).

The respondents were undergraduate students comprising (31 per cent) sophomores, (32 per cent) juniors and (37 per cent) seniors. To identify the respondents' primary social media website for getting news, a list of popular platforms was provided. Respondents indicated that their primary source for getting news is Facebook (53 per cent) followed by Instagram (16 per cent). The latter characteristics are independent from their responses (p-value of Pearson chi-squared test is greater than 0.05). In this study, we asked students how much they trust information (i.e. news, stories) that they read on the internet. Although none of the students trust all of what they read on the internet, the average number of correct answers is same whether they trust most, half or small portion of what they read on the internet.
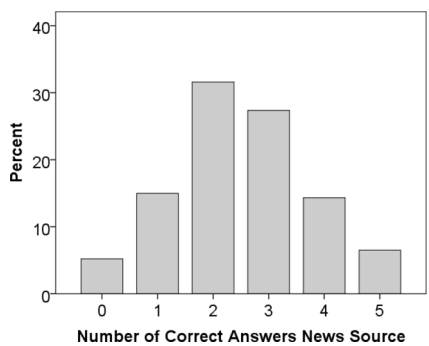
Faculty

The percentage distribution of the number of correct answers for images, stories and articles and the number of correct answers of news sources are represented in Figures 1 and 2, respectively. Figure 3 shows the percentage distribution of the total respondents by faculty.

Two male students from the FE incorrectly answered all the 12 questions in part two of the survey related to images, stories and articles. Two students, one from the FE and one from the FLPS answered correctly all the 12 questions in part two. The mean number of correct answers related to the images, stories and articles is 6 with a standard deviation of 2.4. Moreover, 60 per cent of students scored less than the mean and 90 per cent scored less than nine correct answers. Regarding the news sources part, students from the FLPS and
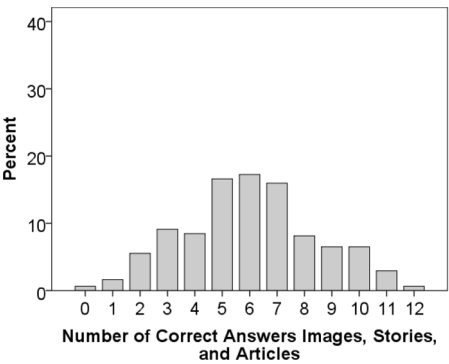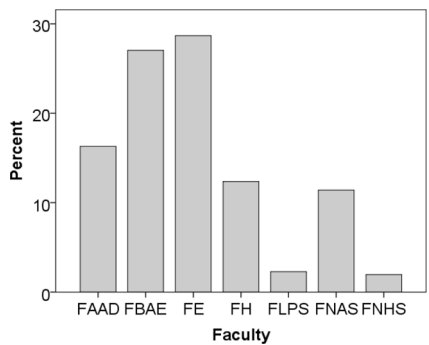

Figure 1.
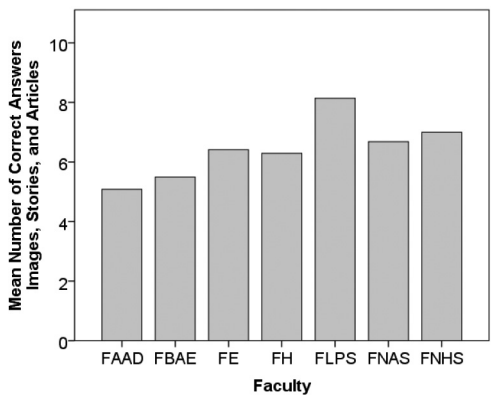Bar graph representing the percentage distribution for correct answers for images, stories and articles

FNHS have at least two correct answers. The mean number of correct answers of news sources is 2.5 with a standard deviation of 1.2. But 55 per cent of students scored less than the mean and 80 per cent scored less than three correct answers. Figures 4 and 5 show that the FLPS scored the highest mean number of correct answers related to the images, stories and articles and correct answers of news sources, whereas the FAAD scored the lowest mean number.

Figure 2.
Bar graph representing the percentage distribution for correct answers for news sources

Figure 3.
Bar graph representing the percentage distribution per faculty

Figure 4.
Bar graph representing the mean number of correct answers related to images, stories and articles

To assess whether the mean number of correct answers differs from one faculty to another, ANOVA one way was conducted. The p-value is 0.01 and 0.017 for correct answers related to the images, stories and articles and correct answers of news sources respectively. Consequently, there is a difference between the average numbers of correct answers among faculties. Using t-test, the following faculties presented differences between the average numbers of correct answers: FAAD and FE, FAAD and FLPS, FAAD and FNAS, FAAD and FH, FBAE and FE and FBAE and FLPS. To highlight the effect of specialization on the number of correct answers, we computed the Pearson chi-square to test whether the faculty is independent from the number of correct answers. The p-value for correct answers related to the images, stories and articles and correct answers of news sources is 0.000 and 0.003, respectively. Thus, the faculty affects the number of correct answers.

Fact-checking information
In this study, we probed participants to see whether they fact-check news or stories before sharing them with friends. The results show that 80 per cent of students indicated that they fact-check information before sharing it with others. Interestingly, the mean number of correct answers is almost the same whether they fact-check news or not. On a related note, it is worth noting that the two participants who answered incorrectly to the questions related to images, stories and articles claimed that they fact-check news and stories before sharing them with friends. Also, only 3 of the 16 students who did not answer correctly to Part 3 of the survey related to assessing the authoritativeness of news sources indicated that they do not fact-check information.

Preferred mean for getting news
To identify the preferred mean for getting news, students were given five options from which to select. Respondents' distribution is presented in Figure 6. The mean number of correct answers related to images stories, and articles differed from one source to another and the newspaper recorded the highest mean number of correct answers, as seen in Figure 7. Remarkably, the average number of correct answers related to news source is approximately the same as all source of news. (Figure 8).

We further characterized using ANOVA the tested parameters in rapport with preferred mean of getting news. The p-value for correct answers related to the images, stories and articles and correct answers of news sources is 0.001 and 0.091, respectively. Using t-test, the following showed differences between the average number of correct answers related to the images, stories and articles: television and search engine, television and newspaper, search
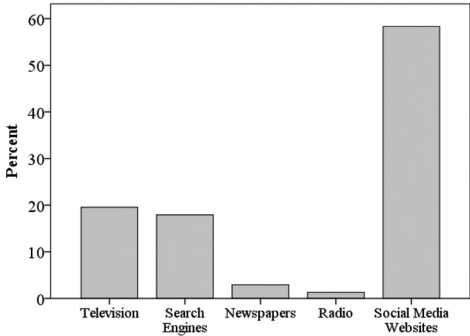
Figure 5.
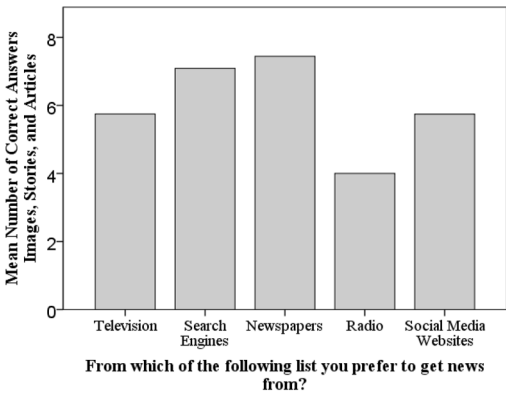Bar graph representing the mean for correct answers related to news sources per faculty
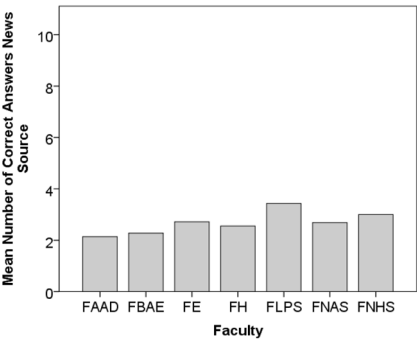
engine and radio, search engine and social media, newspaper and television, newspaper and radio and, finally, newspaper and social media. As p-value of the Pearson chi-square test answer is 0.071 for correct answers related to the images, stories and articles and 0.058 for correct answers of news sources, the preferred mean of getting news is independent from the number of correct answers.
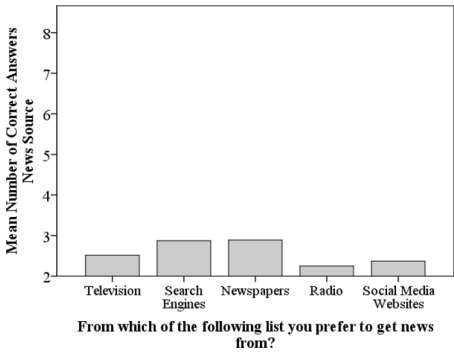

Figure 6.
Bar graph representing the percentage of each source

Figure 7.
Bar graph representing the mean and standard deviation of correct answers related to the images, stories and articles with respect to source of news

Figure 8.
Bar graph representing the mean and standard deviation of correct answers related to news sources with respect to source of news

Discussion and implications

In this study, we sought to highlight the importance of teaching media and information literacy through assessing the information evaluation and fake news judgment adeptness of undergraduate students at Notre Dame University-Louaize (NDU), Lebanon. Though one may assume that students are not adept at evaluating the authoritativeness of information, tangible evidence was necessary to support the aim of the study. Also, because fake news topic has been floating on the surface for a while, both nationally and internationally, we assumed that students will make more effort to verify the authoritativeness and credibility of information.

Overall, the findings concluded that students are not adept when it comes to evaluating and checking the authoritativeness of information and information sources with 60 per cent scoring less than the mean on correct answers related to the images, stories and articles and 55 per cent less than the mean on correct answers of news sources. This inability to verify inaccurate information and dubious information sources requires immediate attention, as this could indicate that students could be an easy target for purposeful manipulation of information. Students need to be educated and equipped with necessary skills to become skeptical and unbiased consumers of information. Despite that, 80 per cent of students indicated that they fact-check information before sharing it with friends, the survey answers did not demonstrate that students are able to evaluate the credibility and authoritativeness of information. Students' answers regarding fact-checking information before sharing it with friends indicate a sense of overconfidence in their abilities to verify and assess the credibility and authoritativeness of information compared to their actual performance. This is in harmony with the findings of Wang (2007) who indicated that students showed overconfidence about their ability to judge the credibility of information and they thought they know more than they actually did.

The results of the study support Abu-Fadil *et al.* (2016) who suggested that students do not take the time to analyze and question the authority and credibility of information before consuming it. Also, based on the results, it can be concluded that students tend to believe what they read on the Web, as suggested by Loertscher (2017), which validates the importance of partnering and collaborating with faculty members to engage students with critical thinking activities. The analysis shows difference between the average numbers of correct answers among faculties which could indicate particular programs may have insufficient focus on literacy skills. Therefore, more understanding of the relationship between the curriculum and learning literacy skills is suggested. The results reinforce the aim of the study as well as library and information professionals' claims that media and information literacy skills are essential for fostering critical thinking among students. The authors hope that the findings of this research will be used by library professionals, particularly in Lebanon, as evidence to convey the importance of teaching and embedding media and information literacy into the curriculum.

Conclusion and future research

This study shed the light on the importance of teaching media and information literacy in Lebanon through providing tangible evidence on the students' lack of skills to evaluate the trustworthiness of information, especially in the fake-news era. Media and information literacy instruction appear to be inextricably relevant to increase the students' knowledge and build up their understanding of and abilities to assess the authoritativeness of information and information sources. Media and information literacy instruction should focus not only on avoiding plagiarism and understanding referencing and citing but also on how to critically evaluate information and information sources with a skeptical stance while emphasizing the necessity of acknowledging biased language. Also, students should be taught how to avoid adopting and practicing what Batchelor (2017) recognized as a skeptical stance for self-serving purposes, which

eventually may have an impact on society, such as avoiding truth and neglecting the authenticity and accuracy of reliable sources. A possible future study could follow similar research design while considering collecting background information on participants to investigate to what extent taking media and information literacy instruction may impact their answers. Also, it would be interesting to evaluate the methods that students used when assessing the credibility and authoritativeness of information and information sources.

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Further reading

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Appendix

Description of images, stories and articles	Answer
Image of the Boeing 797 blended-wing airliner	Fake
Image of ISIS flag in Berlin associated with a fake story	Fake
Image of the Demon Orchid	Real
Image of George Clooney associated with headlines related to vasectomy reversal masqueraded as if it is a CNN post	Fake
News related to Brexit	Real
Story related to a man in Atlanta dressed as a Clown Doll to rape children	Fake
News related to Syrian rebels and civilians leaving Aleppo	Real
News related to Iran testing new missiles and USA. releasing fiery missile interception	Real
Story related to Americans Interested in Science when moon looks different	Fake
Story related to old lady making fur coats with neighbor's cats	Fake
Story related to fishermen in Tripoli, Lebanon, catching one of the weirdest fish in the sea	Real
News related to Obama allocating 4.5 billion to Syrian migrants moving to US	Fake
News Sources	*Answer*
Empireherald (url was empireherald.com now changed to https://currentish.com/)	Dubious
Americannews (americannews.com)	Dubious
Theguardian (www.theguardian.com)	Trustworthy
usnews (www.usnews.com)	Trustworthy
abcnews (http://abcnews.com.co/)	Dubious

Table AI.

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