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To believe or not to believe: Assessing the credibility of social media as non-formal learning

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Overview

This study set out to understand more about the dynamics of credibility in a social media environment. Over the last few years the importance of the internet as a site of non-formal learning has increased substantially, aided significantly by the online learning modes put in place during the Covid pandemic. A huge amount remains unknown about this form of learning, including how people practically assess the credibility of materials they encounter online. It seems likely that there is overlap between people's approach to assessing credibility of materials encountered through different online meaning, meaning some of the insights from studying credibility in non-formal learning may be applicable to formal learning. The literature demonstrates only the earliest phases of building this understanding. The specific contribution of the current study is to look at the dynamics of credibility in three different age cohorts with the intention of capturing specific differences relative to adult non-formal learning.

Credibility considered

A good amount of work has been done regarding credibility of online sources, a lot of it around how consumers can decide if a source is reliable. Generally the starting point for analysis involves three aspects of credibility: source, medium and content (Buhlman & Gisler, 2006). These three aspects are relatively intuitive. Source is the derivation of the information, such as when people judge the New York Times to be more credible than InfoWars (or vice-versa). Medium reflects the actual platform, for example TikTok vs. a Learning Management System. Content refers to the perceived quality of information.

Each of these initial aspects is more nuanced than it might appear. For example, source may include the author of a post, the entity with which it is associated and the person who forwards it to the final consumer. So a text written by Einstein for The New York Times and re-posted by a respected colleague may have greater initial credibility than one lacking in these aspects. Content is perhaps more complex still, reflecting the argument being made in the post as well as the presentation of that argument, which has visual and other aspects (e.g. typos) providing cues to its value.

A key point in considering credibility is the extent to which it may or may not map directly to truth value. A statement may have high credibility or high truth value or neither or both. A conspiracy theorist may be seen as making highly credible statements irrespective of truth value. During the recent pandemic medical experts were considered by some to have dubious credibility despite the high truth value of their statements. Yet truth and credibility are not completely uncoupled. In a communicative setting one can reasonably suggest that credibility is a pre-cursor of truth. In other words, if a statement appears credible then its truth can be considered, but without initial credibility it will be assumed to be untruthful.

Online learning is a specific context for engagement with internet-based materials and it would certainly be reasonable to conclude that materials encountered there would be ascribed a high initial level of credibility. In some ways the stakes are especially high in this context, however, as the aim is not just entertainment but development of knowledge and opinion. The development of a constructivist/andragogical environment for online learning for adults depends

to a significant extent on the engagement of the learners (Arghode, Brieger & McLean, 2017; Huang, 2002). Any strategy that can be put in place to support learner engagement with online materials has the potential to increase the effectiveness of materials and processes.

Where online materials complement and extend existing knowledge, or where they are too technical to effectively contradict it, then the initial ascription of credibility may be sufficient to ensure students take the materials seriously. This does not imply an automatic assumption of truth, but rather that the material passes the initial test for engagement. Challenges include situations where the new information in the course contradicts the previous knowledge of the learner (McDonough, 2014). Here the aim for the instructor is to provide credibility cues sufficient for the learner to at least consider the potential truth of the communication. In order to achieve this, it is incumbent upon instructors to maximise the credibility of materials.

It is relatively common for commentators on online materials to suggest consumers can apply similar forms of information literacy to online information as they would to other media (e.g. Robinson & Robinson, 2020, Porat et al., 2018). This idea is captured in the idea of “digital literacy,” described as “the set of skills, knowledge and attitudes required to access, create, use, and evaluate digital information effectively, efficiently, and ethically” (Julien, 2018, p. 2243). There are two key assumptions within this argument. The first is that readers do actually apply a critical lens to the information they consume in non-digital media. The second is that this lens, where it exists, can be applied to online sources in the same way as to other, more traditional, sources. There is reason to be cautious about both assumptions as empirical evidence is slight.

In designing this initial enquiry into credibility in online learning we approached the online context as a fundamentally educational environment with varying degrees of formality from an online course to browsing social media. Our starting assumption is that the same indicators of credibility will be relevant across that environment. For example, coming across a resource in an online course may increase source credibility compared to an Instagram post, but source credibility will function in the same way in both cases. This leads to our position that instructional designers may benefit from understanding credibility evaluations more broadly as they aim to provide credible materials to support strong engagement.

Research design

As the first in a series of studies on the issue of credibility the purpose of this study was to demonstrate the effectiveness of the method and demonstrate that the findings would have value. The research questions driving this project were:

1. How does truth value affect the credibility rating of exemplar posts?
2. How does presentation affect the credibility rating of exemplar posts?
3. How do demographic factors (age, gender, faculty of study) mediate these effects?
4. To what extent are respondents’ espoused rationales reflected in enacted credibility scores?

A link to an online survey was sent out to all undergraduates at a mid-sized Canadian university. There were 1019 complete responses. Each respondent was asked a series of demographic questions to allow basic segmentation as well as being asked to respond to three stimuli in the form of dummy social media posts. Each respondent was presented with three stimuli, one reminiscent of Facebook, one of Twitter and one of Instagram. Each of these stimuli could be in one of four conditions.

	Well-Presented	Not Well-Presented
Factual	FW	FN
Counter-factual	CW	CN

Table 1: Possible conditions of stimuli

Well-presented stimuli involved a serious looking graphic, a well-written text and a organizational author. Not well-presented stimuli used an eccentric graphic, text with typos and other errors and a personal, eclectic author signature. It was necessary to vary truth content as well as presentation to check the extent to which the veracity of the message was independent of credibility judgements.

Respondents were shown each condition of stimulus at random, so they could be shown FW, CN and CW for the three stimuli, or any other order. Respondents were not aware they were being shown a stimulus in one of these four conditions. They did all see the same order of resemblance: Twitter, Facebook, Instagram. The topics were selected to be appropriate for the platform: politics, climate change, and giant tomatoes in that order. For each stimulus respondents were asked to provide an overall credibility score (0-100) as well as assign a numerical value to the extent to which the score was affected by the source of the “post,” its presentation, their previous knowledge, and their opinion (each of these was -100 to +100). There was also an opportunity to provide open-ended comments. There were 1019 complete responses. Data was analysed using SPSS to facilitate segmentation and assessment of significant differences.

Findings and conclusions.

The overall findings were clear and strong. The highest credibility scores were ascribed to well-presented and factual stimuli. The badly presented counter-factual stimuli received the lowest credibility scores. These results are as one would hope. However, the well-presented counter-factual stimuli received higher credibility scores than the badly presented factual stimuli. In other words, bad presentation lost more credibility than untrue information. There were a number of more subtle effects in the data as well.

In terms of demographics, gender, area of study and year of study had very limited effects in terms of the results. This challenges the argument, often posited by faculty members in certain disciplines, that university-level study develops critical thinking skills and critical literacy which permits individuals to be more effective and discerning information consumers. This remains a possibility, but there was no evidence here that people progressively changed their thinking, or that humanities students were more sophisticated in their judgements than professional school learners.

However, age was more complex. Table 2 shows the scores for different factors where an ANOVA demonstrates statistically significant differences by three age groups. The figures in the table are raw scores out of 100 for credibility and between -100 and +100 for the others. In the case of credibility a lower score means respondents found the stimulus less believable. In the others, a lower score (e.g. -22.0) means that aspect had a less positive impact on credibility.

	Stimulus	Factor	16-20	21-25	25+
Resembles Twitter	FW	Knowledge*	-22.0	-1.52	-3.47
	CN	Presentation*	-72.1	-70.6	-54.6
		Opinion*	-36.6	-38.3	-29.9
Resembles Facebook	FW	Credibility***	56.9	56.0	40.0
		Source*	4.1	0.9	-19.3
		Presentation**	26.1	23.4	-1.3
		Knowledge*	42.2	42.4	21.2
		Opinion***	35.1	38.1	10.7
	CW	Credibility**	45.0	42.6	30.3
		Presentation**	29.5	17.0	4.6
		Knowledge*	-4.4	-13.2	-31.0
	CN	Credibility**	22.6	25.0	11.1
		Source***	-44.8	-47.8	-73.9
		Presentation***	-8.6	-1.9	-50.7
	Resembles Instagram	FW	Credibility***	60.0	60.0
Source**			19.9	15.4	-21.1
Presentation***			27.1	23.8	-3.6
Knowledge***			8.6	8.0	-13.1
Opinion**			7.9	10.6	-9.6
FN		Opinion*	-5.2	-11.2	-22.7
CW		Credibility*	31.1	31.8	20.2

Table 2: Scale scores with statistically significant variations (*p≤0.05, **p≤0.01, *p≤0.001)**

There were five out of 12 stimuli where the oldest age group (25+, the standard criterion for a non-traditional student) were significantly more skeptical than younger cohorts. This shows up in Table 2 under the factor “Credibility.” Three of these were counter-factual (concerning climate change and giant tomatoes) but two were factual and well-presented. Statistically significant reasons for lower credibility scores could include previous knowledge, presentation, source and opinion. It is interesting to note three stimuli where there were different component scores by age (stimuli 1, 2 and 7) but no overall difference in credibility score.

There are a number of detailed dynamics at work here. For example, in four cases older respondents identified their opinion as a significantly important negative influence on credibility. In three cases this reduced the credibility of the stimulus but in another it was less negative than

the other two age groups. In the “Instagram-resembling” case FW both opinion and previous knowledge were identified as leading to increased skepticism regarding a factual post.

Implications for adult education theory and practice

While this study does not directly test materials for formal online learning, the complexity of the dynamics revealed here does challenge the notion that older learners inherently engage in a fundamentally different way with online materials. Going beyond this, it is possible to identify five implications potentially useful to those working in online environments with adult learners.

The first implication is the need to move beyond ideas of younger people being digital natives and older cohorts engaging differently with materials (OECD/Eynon, 2020). There was no demonstration of such an effect here, with many more similarities than differences between the three age clusters examined. The analysis presented here showed more difference by age than by any other factor tested, but there was little consistency to these variances. It would behoove instructors to be very cautious in assuming any type of universal difference capable of being relied upon.

The second implication is the double-edged nature of previous knowledge. In at least one case, the oldest cohort saw a stimulus as untruthful based on previous knowledge even though it was factual. This was not the case for younger cohorts, who were far more tentative about their previous knowledge. This finding has the potential to be important for online adult learning, suggesting that when new knowledge contradicts previous knowledge it is not at all certain the truth value of new knowledge will win the day. This does, of course, reflect one of the key issues of self-directed learning. As Garrison (1997) argues, the facilitator must provide support and materials to contribute to the learning process. If the learner does not find that support and those materials credible it may undermine the learning process as a whole.

The third implication concerns the importance of presentation of online materials. The effect of presentation was hugely significant in this study and there is no reason to believe it would be less significant in other contexts. Instructors may be loath to devote a great deal of time to presentational aspects on inline courses for adults, perhaps in the belief that good materials speak for themselves. The findings of this study suggest that is not the case, and that a failure to attend to presentation can have costs when it comes to credibility—and hence the potential to support engagement and the concomitant learning.

Fourthly, these results call into question the effectiveness of a critical literacy based approach to responsible assessment of credibility in an online environment. While this research does not directly test this proposition the structure is such that one would expect to see some effects if they were to be found, at least by area and year of study. The complete absence of these dynamics raising significant questions around the viability of such an approach. Frankly, following the logical of critical literacy, one would expect a fourth year Humanities student to be more skeptical than a first year engineer, and to have a good rationale. This was not the case in the data generated from this survey.

The final implication is perhaps less concerned with non-formal education or online education generally and more concerned with communications broadly. This is the ease with which it would be possible to gain credibility for well-presented untruths in a social media setting. This has been a significant challenge on a societal level recently, and it is far from clear how it can be addressed easily and quickly given the tendency of consumers to ascribe credibility partly based on the appearance of the information. This research suggests that there is no magic

bullet capable of solving the dilemmas of credibility simply or universally. To believe or not believe remains the question.

Limitations and future research

It is important to acknowledge the limitations of this study. It was based in a single university and focused entirely on undergraduate students. There is clearly a great deal of scope to expand the group of participants in many dimensions. One notable decision was the choice not to include ethnicity in the demographics, primarily in an effort to streamline this first survey by excluding elements with no evidence of relevance. That should be addressed in the future. In addition, the stimuli are time sensitive in that they reflect topics that were somewhat prominent at the time of this survey. This seemed to be a necessary accommodation, but it does decrease the possibility for longitudinal research as altered stimuli seem likely to produce artefact variances.

It would be potentially insightful and important to focus the research more strongly by type of learner. There is a great deal more to learn about adult interaction with online learning and—potentially quite importantly—generational and cohort differences in this interaction. Currently we do not know if materials designed for 18-year olds work for 48-year olds and if not, what the differences need to be. We look forward to future research in this area and expanded understanding of these critical instructional questions.

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