

SOCIAL MEDIA LEARNING BY MEDICAL STUDENTS; CREDIBILITY EVALUATION AND THE ROLE OF EDUCATORS

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Abstract

Access to learning content on social media is expanding as users share information and institutions improve their presence. There is a gap between frequency of use by current medical students (millennials) and their educators. This study investigated these gaps and probed credibility evaluation criteria of students and the roles they expect their educators to play on social media. The Technology Acceptance Model (TAM) was used as theoretical framework for the formulation of hypotheses and research questions. Using a survey of 112 Ghanaian medical students the study measured frequency of use, perceived ease of use and perceived usefulness of social media for learning.

The criteria used by medical students to evaluate the credibility of learning content and the role they expect their educators to play on social media were ranked. Firstly, results from multiple linear regressions supported the influence of perceived ease of use and perceived usefulness on frequency of social media use for learning. Secondly, ranking of criteria used by students to evaluate the credibility of social media learning content revealed the importance of easy access, detailed information and verifiable sources. Thirdly, it was observed that medical students expect educators to play a more active role on social media by developing content and guiding student use.

Key Words: social media, medical education

Introduction

Medical education like many fields of undergraduate teaching in 2019, is dealing with millennial students who are highly knowledgeable about the internet. In contrast, most of their current educators were trained when classroom information could mostly be verified from recommended books or other practitioners. This reveals a difference between students and educators with regards to their familiarity and understanding of learning on social media. Bennett and Maton³ noted the need to research the increase in learning on social media for more understanding and anticipating of developments.

Social media can be defined as online tools that are driven by user developed content, allows users to communicate and is a product of the web 2.0 trend. This study acknowledges the existence of different forms of social media and selected specific platforms based on media popularity and suggestions by respondents. The platforms considered were YouTube, Facebook, Twitter, WhatsApp, Instagram, Snapchat, WeChat, SlideShare, LinkedIn, Pinterest and GooglePlus. According to Colbert⁴ free open-access

medical education (FOAMed) has changed healthcare education in all societies. The ease with which answers can be found to questions makes it useful for students to consult social media as a secondary source of information after regular classroom sessions. Social media learning is characterised by core activities namely, information seeking and sharing (Mills et al.⁶). Information seeking adds to their knowledge after regular classroom practice while information sharing is the contribution of content in expectation of reciprocity, recognition, enjoyment or to inform other learners. It is useful to note that medical students access information and develop content through comments, videos and interactions with other users⁴.

As noted by Hopkins¹, while current medical students have an active online presence on multiple social media platforms, experienced educators show relative skepticism. Brisson² reiterate the need for educators to improve their presence on social media to bridge the activity gap with their students. A search in literature reveals numerous studies on unprofessional conduct by medical students on social media⁸. Research is still split between the inhibitory role of social media and its developmental function with the inhibitory view producing more investigations as recalled by Cheston et al.⁹. The beneficial use of social media can be aided by the ability of students to recognize credible information based on criteria set by educators^{4,10}. Development of credibility evaluation skills with the help of instructors can mitigate the risk of learning inaccurate content¹¹. In medical education this is important because the risk of

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exposure to inaccurate information can affect examination performance and clinical practice⁴

In modern times students evaluate social media learning content independently while prior students had to evaluate the credibility of books¹². The edition (year), expertise of author, recommendations and satisfaction with content presentation style are a few of the many criteria used to evaluate text¹⁰. Just like a car comes with risks of road accidents, the internet also presents its own issues, an analogy used by Mandalios¹². The skill of independently evaluating content based on scientific criteria of the medical sciences is critical⁷. To provide useful insights to students, educators must be active on social media and experience information seeking and sharing¹.

The use of social media by medical students can be theoretically explained with the Technology Acceptance Model (TAM). The TAM by Davis¹³ describes the motivation of people to initiate and sustain the use of technology. This model describes technology acceptance with three components which are design features, user motivation and actual system use¹⁴. The design features and user motivation are the predictors of system use¹⁵. It names adaptation as the first indicator of acceptance and sustained use over an unlimited period as the deciding point, as recalled by Ros et al.¹⁶ and visualized in the figure below.

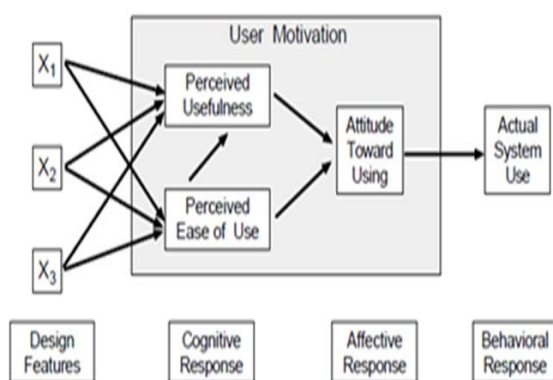


Fig. 1: The Technology Acceptance model by Davies¹³

Design features

Design features refer to the functionalities of the technology including advantages over existing ways of learning¹⁴. In our context, these features refer to the advantages of social media over typical instructor led classroom teaching and libraries. These are community membership, unrestricted access to community information, two-way flat hierarchy interaction, easy content development amongst others¹⁷. Students will use these if they formulate positive perceptions¹⁵ as described by the second component of the TAM known as user motivation.

To use technology, motivation should lead to an attitude which is determined by the usefulness (*PU*) and ease of use (*PEU*) perceptions of the individual¹⁵. *Perceived ease of use* (*PEU*) is defined as the degree to

which using the platform is free of effort¹⁴. *Perceived usefulness* (*PU*) is defined by Edmunds et al.¹⁷ as the degree to which using the system improves performance. These perceptions (*PU* and *PEU*) determine the degree to which students engage in self-directed social media learning and the level to which such behavior is sustained¹⁷. This motivation is a cognitive and affective response to the technology and leads to actual system use¹⁶.

Actual system use refers to the repeated utilization of a technology to achieve personal goals over a non-defined period¹⁷. This occurs if the system helps students reach their learning goals and is predicted to help over the course of their studies¹⁵. This acceptance is demonstrated by the active search for information on social media and contribution to discussions or content development, as described by Stantchev et al.¹⁴.

Using the Technology acceptance model¹³ as theoretical backing, we investigated social media learning practices of medical students after regular medical school classroom sessions, as listed below:

1. The role of medical students' perceptions of ease of use and usefulness on frequency of social media learning
2. The criteria used by medical students to evaluate the credibility of social media learning content
3. The roles medical students want their educators to play on social media.

We hypothesized that;

1. Medical students' **perceived ease of use** predicts their **use of social media** for learning.
2. Medical students' **perceived usefulness** predicts their **use of social media** for learning.

Research Questions

1. How do medical students evaluate the credibility of learning content on social media?
2. What role do medical students want their educators to play on social media?

Method

Sample and study design

All medical students in the clinical year who were willing to participate in the study were selected. A sample of 112 medical students aged between 20-30 ($M = 23.6$, $SD = 2.03$) made up of 62 females and 47 males of a Ghanaian University participated in the study. Using a survey, questionnaires were distributed to students during regular medical school classes. The items are described in the next sub-section.

Instruments

Social media was operationally defined as 'online communities that allow two-way communication between users, posting/sharing of content, comments from users and multimedia representation of content (text, video etc.)'. Learning was defined as 'accessing content addressing topics from your current medical training. These include articles, videos, audios about procedures/topics, interactions with others about such

topics and information you share.’. Cronbach alpha statistics was used to measure internal consistency as recommended by Field¹⁸. Except for frequency of social media learning and demographics, all scales were presented on a 5-point likert scale ranging from ‘Strongly Disagree’ to ‘Strongly Agree’. The questionnaire measured frequency of social media use, perceived ease of use and usefulness, source evaluation by students, roles of educators and demographics, as described in the next paragraphs.

Frequency of social media use

The 8-items asked respondents about how frequently they used Facebook, Twitter, YouTube, WhatsApp and other preferred social media tools. It was developed for this study based on a previous measure by Avci et al.⁵ and yielded a Cronbach’s Alpha of .83 which indicated internal consistency.

Perceived ease of use (PEU) and perceived usefulness (PU)

The scale used to investigate these perceptions were adapted versions developed by Lane and Coleman¹⁹ and Park, Nam and Cha²⁰. With an internal consistency of .74, the 5-item sub-scale for PEU measured perceived ease of getting skilled in using social media and finding content. The 5-item PU scale yielded an internal consistency of .85 and measured the perceived improvements in the learning efficiency of students.

Credibility evaluation

The 20-item instrument was adapted from Lumsden et al.²¹ and yielded an internal consistency of .93 for this study. The items measured how students determined the authenticity of content they find on social media.

Role of educators and demographics

In the first part of this section, 4-items asked whether students disagreed/agreed that educators should actively develop content and create groups on social media.

The second part of this asked demographic questions namely age, current year in medical school and gender. It ended with a short message of appreciation from researchers to respondents and contact information of one of the researchers.

Hypotheses were tested with a multiple linear regression as recommended by Field¹⁸ and research questions were answered with mean rankings as presented in the next chapter.

Results

Hypotheses testing

Medical students’ perceived ease of use and perceived usefulness predicts their use of social media for learning.

Scores on frequency of social media learning were inputted in a model as outcome while perceived ease of use and perceived usefulness were used as predictors.

A significant model emerged indicating support for the hypotheses, as presented below.

Table 1: Model Summary for frequency of social media learning predicted by perceived ease of use and perceived usefulness.

Model	R	R Square	Adjusted R Square	Std. Error (Estimate)
1	.70	.48	.47	.4.1

Note: Std. Error = Standard Error. This table presents a summary of the model with social media use in learning as the outcome.

The summary indicates that 48% of the variance in scores on frequency of social media learning (outcome) is accounted for by the model. For further understanding of the variance an ANOVA table (see Table 2) is presented and interpreted below.

Table 2: ANOVA table of social media learning predicted by perceived ease of use and perceived usefulness.

	Sum of Squares	df	Mean Squares	F	Sig (p)
Regression	1695.72	2	847.86	50.01	.00
Residual	1831.06	108	17.00		
Total	3526.78	110			

Note: df = degrees of freedom, F = F-Ratio, Sig (p) = Significance (p-value). The table presents analyses of variance for the prediction of social media use.

A significant F-ratio indicates that the variance accounted for by the model (see Table 1; 48%) was not due to chance but the predictors. To understand the contribution of each predictor the next table (see Table 3) presents the coefficients.

Table 3: Coefficient table of all predictors of social media learning.

Variables	B	SE	β	Sig (p)
Constant	3.27	2.77		
Perceived ease of use	1.05	.19	.53	.00
Perceived usefulness	.33	.15	.21	.03

Note: B = Unstandardized coefficient, SE = Standard Error, β = Beta, Sig (p) = Significance (p-value). The table presents coefficients for both predictors used in the multiple regression

According to the coefficients table (see Table 3), both perceived ease of use and perceived usefulness were significant predictors of social media learning.

Research questions

How do medical students evaluate the credibility of learning content on social media?

Mean scores on the credibility scale were ranked to provide insights into the methods preferred by most students, as presented in the next table.

Table 4: Ranking of scores on credibility evaluation criteria for social media learning content.

Preference	Sum	Mean	SD
Free access to information	457	4.19	.88
Depth and detail of document	419	3.84	.84
Check document domain e.g. .edu, .gov	415	3.84	1.11
Suggestions to other websites	412	3.78	.90
Date of publication	404	3.71	1.03

Note: SD = Standard deviation. This table presents a ranking of means of scores obtained credibility verification criteria of respondents.

The table above indicates support for access and depth of the document as the most highly ranked credibility criteria used by students. Domain, suggestions (references and date of publication are also highly ranked by medical students.

What role do medical students want their educators to play on social media?

The active sharing of information on social media were the most highly ranked.

Table 5: Ranking of scores on the roles expected of educators by their students.

	Sum	Mean	SD
Share content online	465	4.23	.70
Share examples of social media use in clinical practice	446	4.05	.85
Develop content on department pages or profiles	442	4.03	8.2
Develop content on personal pages	442	4.02	.77
Create study groups for students	411	3.77	1.0

Note: SD = Standard deviation. This table presents ranked scores of the role respondents expect from their educators.

The above table shows sharing of content as the most highly ranked role students want educators to play while the creation of study groups was the least preferred.

Discussion

Medical students' perceived ease of use and perceived usefulness influence their use of social media for learning

The findings support the contribution of both perceived ease of use (PEU) and perceived usefulness (PU) on the frequency of social media learning by medical students. This finding is not surprising and is an extension of assertions by Stantchev et al.¹⁴. Firstly, regarding PEU the findings mean medical students will access social media to learn if information seeking/sharing is with little effort compared to a visit to the library or an educator. This means accessing content on social media should be easier than other methods like going to the library, buying the latest version of a book or visiting an educator (Ros et al.¹⁶). Secondly, regarding PU medical students prefer learning on social media if their previous attempts led to a more effective outcome than a visit to the library or an educator. This effectiveness means the outcome of social media learning should be the same or better than traditional methods (Cheung & Vogel¹⁵). The finding supports the ease and effectiveness of social media learning as mentioned by Edmunds et al.¹⁷. The ease and effectiveness can be experienced if content credibility is comparable to book recommendations from educators or visits to educators (Avci et al.⁵), this is discussed in the next paragraph.

How do students evaluate credibility of online content?

Firstly, the findings support easy access to detailed information from known official domains (URLs) and educators as more credible than unknown sources. Secondly, there is support for the role of references to other documents with dates of publication. These documents may be preferred because their content can be verified. These findings were expected and is an extension of previous assertions by Lumsden et al.²¹. The trust in detailed, known and verifiable sources means students use these criteria to reduce the risk of learning inaccurate content, as mentioned by Broadbent and Poon¹¹. Mandalios¹² supports this by explaining that the use of these criteria and others should be trained by educators. Students understand the presence of risks in free access to learning content and they want educators to train them with skills to evaluate content. This and other expectations of students are discussed in the next paragraph.

What role do medical students want their educators to play on social media?

In line with suggestions from Hopkins et al.¹, the findings from this research proposed a more active role for educators on social media with regards to content development, guidance and experience sharing. Firstly, the students want their educators to contribute to social media learning by sharing content they find and developing content on profiles or pages of their medical school blog. Secondly, students want their educators to suggest social media sources and guide them on how to identify useful sources of information. Thirdly, the findings mean that students want educators to share more insightful clinical experience about relevant topics. These points discussed in this paragraph mean students support the active involvement of their educators on social media. This balance between the

skepticism of educators and the optimism of students is important (George & Green⁸). Educators can enable effective use of social media by integrating their traditional 'safety first' criteria with the free open access needs of the students (Brisson et al², Colin et al.¹⁰).

After the conduct of this study, researchers noticed limitation which will be stated in the next section with a suggestion to future researchers on how to improve future works.

Limitations and suggestions for future research

The limitations of this paper are with regards to the scope of data collection and the absence of hypotheses about device type of internet access. Firstly, data was collected in only one medical school which affects generalizability of findings. Future studies can collect data from more medical students and different cohorts to ensure broader generalizability. Secondly, the study focused on the frequency of social media use irrespective of the device and type of internet access. Future studies may consider this to reveal a more in-depth picture of how these affect the frequency of social media use by medical students.

Conclusion

This paper extends the assertion that frequency of social media learning by medical students is high and in need of more attention from educators. It affirms the contribution of student perceptions about ease of use and usefulness to their use of social media for learning. To make social media content more useful, medical students need to have scientific criteria for evaluation of credibility and educators need to contribute to content. As indicated by the demographics from the questionnaire presented in the methods section, the current medical students are from the millennial generation and are more likely to be active social media users. Medical schools should consider creating an online presence and encourage faculty to share their academic work and professional perspectives on topics relevant to their current and future students.

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