

Students' Perspective on Prospect of Anatomy Education in Bangladesh Through E-learning Using Social Media as a Complementary Tool

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Abstract

Introduction. In the recent global pandemic situation, Anatomy teaching-learning became mostly online-based. Increased use of social media for learning Anatomy is observed among medical students in Bangladesh. Although many students are constantly using social media for learning, there is a need for systematic studies about the outcome and future possibilities of social media in Anatomy education. **Objectives.** This study aimed to find the prospect of e-learning through social media as a complementary tool in Anatomy education in Bangladesh. **Methods.** The research was descriptive and cross-sectional. A self-administered questionnaire survey was conducted on 317 medical undergraduates, graduates, and postgraduates of Anatomy and other disciplines to analyze their experiences using social media for learning Anatomy and their perceptions, views, and suggestions regarding its use as a complementary tool. The data were analyzed using descriptive statistics. **Results.** Among the students, 55% were females, and 45% were males. About 95%, 84%, and 15% of the students used YouTube, Facebook, and Instagram to learn Anatomy. About 50% used YouTube, and 40% used Facebook daily. YouTube was found to be the most useful social media for learning Anatomy by 84% and Facebook by 12% of the students. These platforms became useful for the students in understanding difficult topics of Anatomy, developing interest, and preparing for examinations. The mean impact of social media on learning Anatomy was 3.603, indicating a positive impact. More than half of the students wanted to use social media as a complementary tool in the future. Different aspects of using Facebook and YouTube for learning Anatomy and suggestions for effective use were discussed. **Conclusion.** YouTube and Facebook are the two most popular social media for learning Anatomy as complementary tools among Bangladeshi medical students. There is ample scope for Anatomy educators to make useful video content on YouTube.

Keywords: Anatomy education, Social media, Complementary tool, Facebook, YouTube

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Introduction

Anatomy education can be regarded as the foundation of a medical study. Lately, there has been a reduction in class hours from the Anatomy curriculum¹. Most students rely on online materials to some extent for

learning Anatomy. University students and medical students are using this for academic and non-academic purposes². Most recently, after the outbreak of COVID-19 as a global pandemic, most universities in the world and medical

schools suspended their regular face-to-face classes and became mostly dependent on online classes³. In this circumstance, e-learning using social media has emerged as a complementary learning tool for medical students in Bangladesh. Here, many students are embracing these tools for learning Anatomy. They participate in online classes, group activities like quizzes, and figure-drawing contests on social platforms. They are also watching video clips of Anatomy since they cannot get exposed to skeletons, cadavers, viscera, plastic models, and other Anatomical specimens. The number and activity of academic Facebook pages, groups, and YouTube channels concerning Anatomy have increased rapidly. Through social platforms, students can now have a virtual community by which they can share their ideas, knowledge, and queries with peers and interact with their teachers. Although a good number of Anatomy software is available, mostly they are not free of cost³. In this way, in recent situations, students have become dependent on these virtual learning communities to learn Anatomy as a source of information.

Social media is electronic communication designed to create online communities where people share content quickly⁴. Medical education has expanded beyond the classroom through the use of social media. Begum et al.² assumed that social media bridges formal and informal learning. Most students are now using web-

based platforms as a source of educational information¹. Among social media, Facebook, YouTube, and Twitter were found to be used in Anatomy teaching-learning⁵. One positive aspect of social media as a learning tool is its high engagement². Barry et al.¹ suggested that the Anatomy community might find value in adding social media as a complementary tool in Anatomy education.

On the other hand, it needs to be clarified that social media positively influences anatomical knowledge due to a lack of comparative study⁵. The perception of teachers and students might be different on this issue. Most students have a positive attitude toward using social media for academic purposes². Barry et al.¹ suggested a change in Anatomy instructors' perception. Arnobjorsson⁶ commented that social media had become a natural part of our lives; therefore, the ways of using it effectively should be a matter of discussion rather than questioning the existence of social media.

Facebook is by far the most popular social media in the world⁷. Many medical students use Facebook for social interaction and learning Anatomy in Bangladesh. It allows users to create personal profiles, pages, and groups. Many educational institutions now have their own Facebook page. Pickering et al.⁷ suggested that Facebook can play a supportive role in student exam preparation. It can enable students to create a supportive learning community⁸. Ali⁹ also

suggested that the students can use Facebook as a complementary educational platform that enables students to have their own learning space. Facebook has the potential to engage students as an educational platform¹⁰. A student can share knowledge, experiences, queries, and confusion in a Facebook group. They can interact with their peers by liking, commenting, sharing, or sending a message. In addition to that, they can reach teachers easily through this platform. Teachers can also share posts containing academic materials, videos, links, and notes and notify their students about future academic events. Although it has manifold use, there needs to be clear evidence that this enables the students to achieve a higher level of competence¹⁰. Certainly, there are some drawbacks, like distraction and excessive time consumption. There are also privacy issues for the instructors and the students and ethical use of this platform⁸.

YouTube is a popular video-sharing site that allows users to upload and share videos they find useful¹¹. Due to the reduction of teaching hours of Anatomy in MBBS curriculum, it has become necessary to support the teaching with some alternative instructional tools⁸. In the recent COVID situation, the need for complementary tools was felt to a greater extent. YouTube is an emerging platform for learning Anatomy, allowing free access to students¹². Many students search for academic information on the Internet. Therefore, YouTube has

become a useful resource for anatomical information¹³. Students learn better when they see the cadaver, skeleton, viscera, and models and touch them physically. Since they did not have demonstration, dissection and face-to-face classes, they relied mostly on videos for visual correlation with anatomical information.

For this reason, demonstration, dissection, and explanatory videos on YouTube were becoming useful. Raveron¹⁴ commented that human dissection videos could become a useful source of information for students. YouTube has also crossed the barrier of time and place. However, selecting appropriate and quality videos takes much work for the students¹². Sometimes, videos made by non-professionals or semi-professionals need adequate and authentic information¹². Azer¹³ demanded more work from the Anatomy educators in making quality videos covering different topics. Since the students have a positive attitude toward learning through YouTube, educators should adopt this tool in teaching Anatomy¹⁵. Using Twitter for learning Neuroanatomy was found useful by Hennessy et al.¹⁶. They opined that the potential of social media for learning purposes is yet to be discovered by educators.

Although students have a positive attitude towards social media since it is a new technology, the positive impact could be clearer. There is also a lack of comparative studies that indicate a positive outcome⁶.

Many students in Bangladesh are constantly engaged with social media to learn Anatomy. However, there have been few studies on the impact of social media on learning anatomy, its positive and negative aspects, its use as a complementary in the future, and effective social media use.

This study was conducted to find out the medical students' experiences, perceptions, and views regarding using social platforms in learning Anatomy and to get suggestions for its effective use.

Material and Method

The current research was descriptive and cross-sectional. A questionnaire based survey analyzed medical students' experiences, perceptions, and views regarding using social platforms in learning Anatomy and elicited suggestions for its effective use.

A total of 317, including 270 medical undergraduate students of both government and private medical colleges, 26 medical graduates, and 21 doctors (postgraduates in Anatomy and in post-graduation courses of other disciplines) took part in this research. Convenience sampling was used for the selection of the participants.

A questionnaire was developed studying the relevant literature and blending that knowledge with personal and peer experience. Eighteen closed-ended, and two open-ended questions were prepared under three sections. 'Select one', 'Yes/No'

and, a 'Likert-like scale' were used. The language of the questions was kept simple and understandable for the students. It was initially administered to 5 medical undergraduates and asked about the clarity of language of the items and response anchors, and their feedback was incorporated into the final survey questionnaire. The questionnaire was prepared using Google Forms. For the construction of the questionnaire, Begum et al.² guideline was followed. The Cronbach's alpha was 0.81.

The link to the Google Forms containing informed consent and the questionnaire were posted to different Facebook medical academic groups in Bangladesh. Responses were taken for seven days. The survey results of the Google sheet were fed into SPSS 22. The percentage frequencies and means were calculated.

Results

Three hundred seventeen students participated in the survey, including undergraduate students, medical graduates, and postgraduates. The demography of the participants is shown in Table 1. YouTube was found to be used by most of the students (96.5%) for learning Anatomy. Figure 1 shows the use of different social platforms for learning Anatomy. About half of the students used YouTube over a year, whereas about one-third used Facebook for a year. About 17% of the students did not use Facebook to learn Anatomy.

Table 1: Demography of the students participating in the survey (n=317)

Particular	Option	Frequency	Percentage frequency
Gender	: Male	142	44.8%
	Female	175	55.2%
Age	: 18-24	273	86.1%
	25-34	36	11.4%
	34<	8	2.5%
Status of medical study	: Undergraduate	270	85.2%
	Graduate	26	8.2
	Postgraduate (Anatomy)	14	4.4
	Postgraduate (other disciplines)	7	2.2

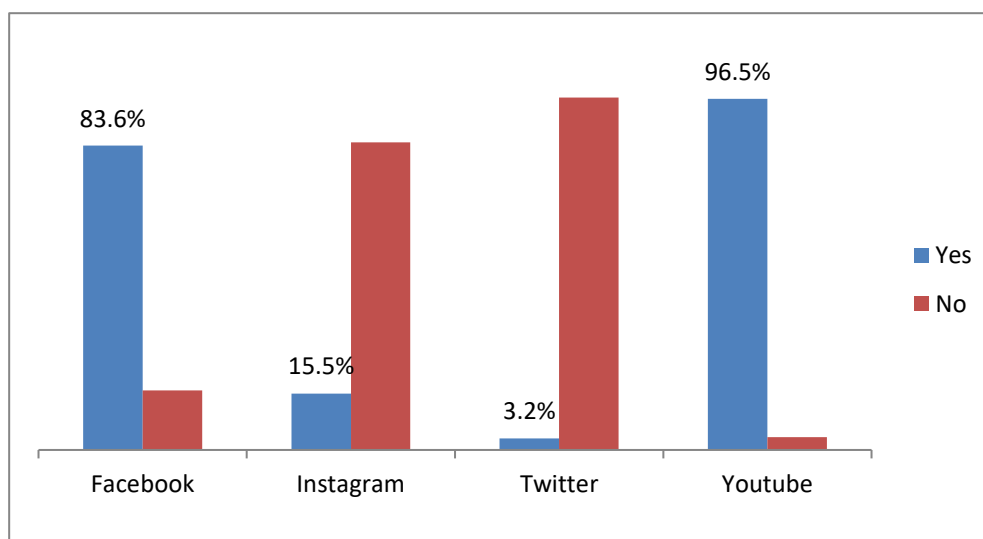


Figure 1: Bar diagram showing percentage frequencies of the students using different social media for learning Anatomy (n= 317).

About 85% of the students thought that YouTube was most useful for learning Anatomy, and then the position of Facebook (12%). Twitter and Instagram were found to be most useful by none of the students. About half of the students did not

use Facebook or YouTube daily to learn Anatomy. However, the percentages of students using YouTube and Facebook for more than 30 mins daily were 30% and 15%, respectively.

The majority of the students thought that social platforms helped them in explaining difficult topics of Anatomy. The perception of the students regarding the purposes served by social media in learning Anatomy

is shown in Table 2. About one-third of the students preferred Bangla as the language of academic content. The rest of the students either preferred English or had no issues with language.

The mean score of the impact of social media on learning Anatomy was 3.6. No significant difference was found between different groups having different statuses of study. A majority of the students concurred that they wanted to use social media as a complementary tool for learning Anatomy in the future, although about one-fourth of the students were undecided on this matter, as shown in Figure 2. However, about 70% of the students recommended using social media to their fellow non-users. On Facebook, video posts were liked most by more than 40% of the students as the post category. Other than video posts, short written posts with figures and question posts were popular among students.

The students were found to be engaged in different academic group activities on Facebook. The willingness of the students to participate in different group activities is shown in Table 3. Regarding the student's participation, only 20% of the students actively posted on the Facebook group(s). Half of the Facebook group(s) students were silent followers.

About 80% of the students either agreed or strongly agreed that the use of Facebook enabled them to share important academic content, and the mean score of 3.84 also indicates that. Positive aspects of e-learning through Facebook are shown in Table 4. Most students either agreed or strongly agreed that creating academic content for Facebook causes excessive time consumption. The negative aspects of e-learning through Facebook are shown in Table 5.

Regarding the preferred type of videos, students were divided into opinions. Explanatory, animation, and demonstration videos were liked most for learning Anatomy. More than half of the students preferred videos for 5-20 minutes. On the contrary, about one-fourth of the students opined that the length of the videos did not matter much. The positive aspects of e-learning through YouTube are shown in Table 6. The mean score of each aspect was found above 4. Most students either agreed or strongly agreed that video content sometimes provided inadequate information and selecting quality videos was difficult, as mentioned in Table 7. Suggestions of students for effective use of Facebook and YouTube for learning Anatomy are shown in Table 8 and Table 9.

Table 2: Perception of students regarding the purpose served using social platforms for learning Anatomy (n= 317)

Purpose served	Percentage frequency of the degree of effectiveness					Obtained score (mean ± SD)
	Not at all (1)	Not so much (2)	Undecided (3)	Much (4)	Very much (5)	
Developing interest	9.8%	18.6%	19.9%	35.0%	16.7%	3.303 ± 1.228
Explaining difficult topics	5.4%	15.5%	17.7%	31.9%	29.7%	3.650 ± 1.206
Preparing for exam	12.6%	18.3%	18.3%	31.2%	19.6%	3.268 ± 1.309
Sharing note	11.7%	21.8%	22.7%	27.4%	16.4%	3.151± 1.263

Table 3: Views of the students regarding willingness to participate in different group events on Facebook (n= 317)

Group event	Percentage frequency of the degree of effectiveness					Obtained score (mean ± SD)
	Not at all (1)	Not so much (2)	Undecided (3)	Much (4)	Very much (5)	
Figure drawing contest	30.3%	24.0%	18.9%	18.6%	8.2%	2.505
Online class	13.6%	17.0%	11.0%	40.7%	17.7%	3.319
Online course	16.4%	17.7%	14.8%	35.0%	16.1%	3.167
Quiz	12.0%	13.2%	13.9%	37.2%	23.7%	3.473

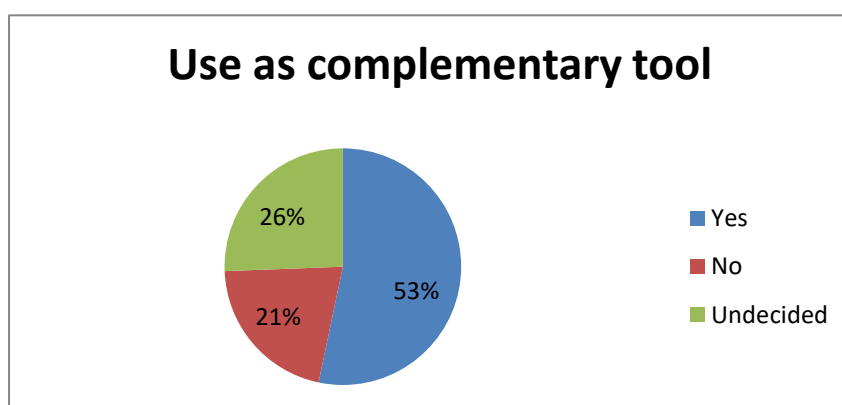


Figure 2: Pie diagram showing the willingness of the students to use social media as a complementary tool (n= 317).

Table 4: Perceptions of the students about the positive impact of Facebook on e-learning complementary tool to the Anatomy classroom in the future (n=317)

Impact	Percentage frequency of the degree of effectiveness					Obtained score (mean ± SD)
	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)	
Enabled interaction with fellows and teachers	10.4%	18.0%	16.7%	39.7%	15.1%	3.312 ± 1.227
Enabled sharing of important academic content	6.3%	4.7%	10.7%	54.3%	24.0%	3.849 ± 1.041
Enhanced writing skills	14.8%	23.3%	22.7%	28.7%	10.4%	2.965 ± 1.238
Enhanced creativity	10.1%	11.4%	18.3%	42.6%	17.7%	3.464 ± 1.999

Table 5: Perceptions of the students about the drawbacks of e-learning using Facebook (n=317)

Drawback	Percentage frequency of the degree of effectiveness					Obtained score (mean ± SD)
	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)	
Anxiety about participation	8.8%	19.6%	27.1%	29.3%	15.1%	3.224 ± 1.184
Excessive time consumption in creating academic content	4.1%	15.5%	22.7%	41.0%	16.7%	3.508 ± 1.069
Understanding difficulty	9.1%	28.7%	22.1%	27.8%	12.3%	3.054 ± 1.193
Unwillingness to share idea(s) in public	7.3%	23.3%	25.6%	29.3%	14.2%	3.202 ± 1.162

Table 6: Perceptions of the students about the positive aspects of e-learning using YouTube (n= 317)

Positive aspect	Percentage frequency of the degree of effectiveness					Obtained score (mean ± SD)
	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)	
Easily searchable	1.6%	3.8%	3.8%	50.5%	40.4%	4.243 ± 0.823
Organized	0.9%	5.4%	10.4%	52.7%	30.6%	4.066 ± 0.841
Understandable	2.2%	4.4%	10.4%	50.2%	32.8%	4.069 ± 0.897
Visually correlated	2.5%	4.7%	12.6%	43.2%	36.9%	4.073 ± 0.953

Table 7: Perceptions of the students about the drawbacks of e-learning using YouTube (n=317)

Drawback	Percentage frequency of the degree of effectiveness					Obtained score (mean ± SD)
	Strongly disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly agree (5)	
All contents of Anatomy are not available	6.3%	18.9%	13.9%	44.5%	16.4%	3.457 ± 1.156
Watching videos causes excessive time consumption	5.4%	23.7%	15.8%	43.8%	11.4%	3.322 ± 1.115
Selecting quality video is difficult	4.7%	19.2%	15.8%	42.6%	17.7%	3.492 ± 1.129
Sometimes, contents lack authenticity	3.2%	12.0%	24.0%	44.2%	16.7%	3.593 ± 1.004

Table 8: Suggestions of the students for a better learning experience in Anatomy using Facebook

Post	Group Activity	Video
Edumeme	Online exam	3D videos with explanation
Sharing notes of teachers	Figure drawing program	Short videos
Concise post	Interactive session	Sequential video upload
Question-answer pattern	Group discussion	Demonstration of viscera and bones
Regular and serial posting	Live sessions	Using real image
Presenting like story	Item-wise quiz	3D figure and animation
Clinical orientation	Book oriented course	Dissection video
Appropriate reference	Card-based course	
Using hashtag		
Topics important for Viva		
Using mnemonics		
Post in Bangla		

Table 9: Suggestions of the students for video-makers to improve Anatomy learning experience using YouTube

Tool	Type	Technical
Using more figures and models	Bangla explanatory video	Clear and attractive voice
Slides only have figures	Animated video	Professional studio setup
Using illustration as a story	Live drawing with a drawing pad	Mentioning the source of information
Using 3D diagram	Question-answer session	Card-wise arranged
Demonstration of cadaver	Short demonstration video	Sorting good quality videos
Demonstrating fresh viscera	Exam based video	Getting help from fellow editors
Quiz after video	Guideline on writing answers	English subtitle
Funny and attractive content	3D video	Note of class in the description

Discussion

The present research was designed to address the issues of using social media as a complementary tool in Anatomy education. The questionnaire survey was done as initial exploratory research. Although there are many popular social media, four platform-based media in the literature for Anatomy education were selected for the present search. Emphasis was given to Facebook and YouTube to assess the deeper aspects of using these media for learning Anatomy. Since the global pandemic and lockdown, Google Forms was used to collect data.

A good number of female participants was observed in the present research. The proportion of females was 55% which is consistent with the finding of Begum et al.² on Bangladeshi medical undergraduates. Again, not only undergraduate students, graduates and postgraduates were also found to use social media for learning Anatomy in the present research. Since graduates and postgraduates have less scope for formal learning, they can utilize these platforms for learning Anatomy. Based on the number of students using particular social media, YouTube was

undoubtedly the most popular, used by 96.5% of students. Jaffar¹¹ found that 98% of medical students had used YouTube as an online source of information. The use of Facebook comes second, and its use is increasing among doctors and medical students². Although Instagram and Twitter were found useful by Hennessy et al.¹⁶ and Nguyen et al.¹⁷, respectively, these media were used sparingly by Bangladeshi medical undergraduates for learning Anatomy.

Regarding using social media as a complementary tool for learning Anatomy in the future, the students' opinions were non-conclusive. About half of the students were either undecided or wanted to avoid using it in the future. However, most students recommended its use for their fellow non-users. Therefore, it can be assumed that they have a positive attitude toward using social media for learning Anatomy, but they are still determining the outcome. Several researchers have suggested using social media as a complementary tool in learning Anatomy^{7,11,15,17}. However, it needed to be evident from the literature that social media positively enhanced Anatomical knowledge and competence⁶.

Video posts were found to be the most popular. The reason might be that the students could not access real cadavers, viscera, skeletons, histological slides, and other anatomical models and specimens during the global pandemic. Videos became helpful in filling their gaps by visually correlating anatomical information. Question posts evoke much interaction among peers as well as teachers⁷. From the comments to open questions, it was found that the students liked question-answer-type interactive sessions. Again, memes for learning Anatomy are becoming popular among Bangladeshi medical undergraduates. Jaffar⁷ found that humor post gets the most engagement. Therefore, memes or humor posts might help draw interest to the topic.

One noticeable aspect of Facebook for e-learning was the participation of many students in different academic group events like quizzes, online classes, figure drawing contests, and online courses. Pickering et al.⁷ suggested that Facebook played a supporting role in the Anatomy assessment. Since the students could not interact face-to-face with their peers in their institutions, quizzes were becoming helpful for their self-assessment. These group events on Facebook can be used as a helpful tool by educators for developing enthusiasm, interest, and a sense of competitiveness among students.

Most of the students were found to be silent followers on Facebook for e-learning because they might not like expressing their knowledge deficit to others, and creating content requires plenty of time. Some students complained that Facebook caused distraction and privacy of students could not be maintained. Begum et al.² reported issues of unprofessional behavior among students and recommended awareness to use social media for professionalism and

develop institutional guidelines. Jaffar⁷ suggested that instructors use Facebook pages rather than profiles to avoid friending and crossing social boundaries.

In contrast, an important positive aspect of e-learning using Facebook is that students can share their thoughts, ideas, and academic knowledge with others through this platform. So, this platform enables them to express themselves and become creative. In addition, some students commented that if class notes of teachers were shared on Facebook, it would be useful for them.

The students liked online classes on the social platform, but recorded video following the class format was not liked by many. Since they remain in a rush to complete the curriculum, many students prefer videos of shorter duration on YouTube. Many complained about the unnecessary length of videos and demanded shorter ones. They suggested that short videos are very helpful for them. Although the experience of attending dissection classes will not be achieved virtually through YouTube, dissection videos might help understand the structure in reality and their spatial relations¹⁵.

Most students now search YouTube for anatomical information and watch videos to understand difficult topics of Anatomy. The mean score on different positive aspects of YouTube in the present research was above 4.0. Therefore, it is clear that YouTube positively impacts students of learning Anatomy. The reason might be that YouTube is a convenient search tool; videos can be well organized in playlists and can be made visually correlated and understandable. Nevertheless, it was found by several researchers as well as the present study that finding quality video content is a difficult task for students. Many of the students of the present research suggested

that video creators should ensure authenticity. Due to the absence of a review process, sometimes non-professionals and non-specialists upload videos that might need adequate or correct information¹². Curran et al.¹⁸ suggested a peer review process before publishing a video in public. In addition, Azer¹³ found YouTube to be an inadequate source of information for Surface anatomy. Most students in the present research also agreed that all contents of Anatomy were not available on YouTube. There are plenty of scopes for the contribution to Anatomy education by making videos that will be helpful for the students.

Conclusion

Integrating social media into our daily life has made us dependent on their use. Integrating academic activity with it may

have potential benefits. It is true in the recent COVID situation since there were no real demonstrations and dissection classes, and teachers were mostly dependent on online classes. Among Bangladeshi medical students, YouTube and Facebook are the most popular social learning platforms. Facebook has the potential to foster a supportive academic community and facilitate peer interactions. YouTube videos are useful for illustrating anatomical structures and elucidating complex topics. There is ample opportunity for Anatomy educators to create instructional videos on YouTube. It is recommended to conduct additional research on this topic to understand the outcome clearly and to plan to integrate social media as complementary tools.

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