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The Halo Effect of YouTube: Boosting Perceptions of Social Media for Medical Learning

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Abstract

Background

Digital platforms like YouTube and social media have evolved from supplementary aids to integral components of medical education, crucial for developing self-directed learning (SDL) skills. However, there is limited evidence on how final-year medical students—on the cusp of professional practice—use these tools and how perceptions of one platform influence another. We aimed to investigate the use of YouTube and social media among final-year medical students and their impact on academic confidence and SDL.

Methods

We conducted a mixed-methods, cross-sectional study at the University of Kerbala College of Medicine, Iraq. A validated questionnaire was administered to 120 final-year students to quantify usage patterns and perceived effectiveness of YouTube and social media. A decision-tree machine learning model was used to identify key predictors of perceived social media effectiveness. Qualitative data were gathered through three focus group discussions (n=18) to explore student experiences, which were then analyzed thematically. The study received full ethical approval.

Results

YouTube was used frequently by 85% (n=102) of students (mean 4.5 h/week) and rated as highly effective for learning by 90% (n=108). While 78% (n=94) used social media regularly, only 65% (n=78) perceived it as effective. The decision-tree model (83.3% accuracy) revealed that positive YouTube experience was the strongest predictor of perceived social media effectiveness. Qualitative analysis highlighted accessibility benefits but raised concerns about information quality and distractions.

Discussion &conclusion

YouTube has become a cornerstone of SDL for final-year medical students, and its positive perception creates a "halo effect," improving student disposition towards other digital learning tools like social media. Medical educators should leverage this phenomenon by formally integrating these platforms into curricula. The focus should be on teaching critical appraisal and information management skills, thereby transforming students' existing digital habits into a robust framework for lifelong learning in their future careers.

Keywords: Medical Education, Self-Directed Learning, YouTube, Social Media, Halo Effect, Digital Literacy

Introduction

The paradigm of medical education is shifting from traditional, instructor-led models towards those that empower student-directed exploration. Platforms such as YouTube and social media have transitioned from supplementary aids to integral components of student learning [1, 2], empowering learners to identify knowledge gaps, locate resources, and manage their study plans—the very essence of self-directed learning (SDL) [3, 4]. This skillset is fundamental for physicians, forming the bedrock of lifelong learning, critical thinking, and clinical independence [5, 6].

Social media facilitates a vibrant, collaborative learning environment [7, 8], allowing students to discuss cases, receive informal mentorship, and share micro-lessons [9]. Concurrently, YouTube has been hailed as an indispensable educational asset for over a decade [10], offering a vast library of visual and procedural content ideal for visualizing anatomy [11], watching clinical demonstrations [12], and mastering complex concepts at one's own pace [13].

However, a critical knowledge gap exists regarding the specific digital habits of final-year medical students. As this cohort stands at the precipice of professional practice, their self-directed learning strategies carry immediate implications for clinical readiness and patient safety [5, 6]. Understanding how they use these tools, and crucially, how their experiences on one platform shape their perceptions of others, is vital for designing effective educational support. This study employed a mixed-methods approach to investigate this phenomenon among final-year students in Iraq, aiming to provide educators with actionable insights for integrating digital tools into modern medical curricula [14, 15].

Methodology

We used a mixed-methods, cross-sectional design to examine the influence of YouTube and social media on the self-directed learning (SDL) of final-year medical students at the University of Kerbala's Faculty of Medicine, Iraq. This design enabled the quantification of usage patterns and the exploration of underlying experiences and perceptions.

Study Setting and Participants

The study was conducted at the Faculty of Medicine, University of Kerbala. A convenience sample of 120 final-year medical students was recruited. This cohort was selected due to their heavy reliance on SDL as they prepare for professional practice.

Data Collection

Data was collected using two complementary tools.

- **Quantitative Data:** A self-administered questionnaire was developed based on a review of the literature. It collected data on demographics, frequency and duration of YouTube and social media use for learning, content preferences, and perceived effectiveness. The questionnaire was assessed for content validity by medical education experts and pilot-tested with 15 students to ensure clarity and cultural appropriateness. All participants provided written informed consent.
- **Qualitative Data:** Three focus group discussions were held with six students each (n=18). Participants were purposively selected from the quantitative sample to ensure a diversity of usage patterns and viewpoints. A trained moderator used a semi-structured guide to explore the benefits, challenges, and overall impact of these platforms on SDL. Sessions lasted 60–90 minutes, were audio-recorded with consent, and supplemented with field notes.

Data Analysis

- **Quantitative Analysis:** Data were analyzed using descriptive (frequencies, means, standard deviations) and inferential statistics. A p-value of < .05 was considered statistically significant. A Chi-Square test examined the association between platform usage frequency and perceived learning outcomes. A Mann-Whitney U test compared the perceived effectiveness of YouTube versus social media. A decision-tree classification model (CART algorithm) was built to identify predictors of perceived social media effectiveness. The model included the following predictor variables: frequency of YouTube use, perceived impact of YouTube on learning, frequency of social media use, age, and gender. Model performance was evaluated via a confusion matrix, reporting accuracy, precision, and recall.
- **Qualitative Analysis:** We had a specific way of looking for this "halo effect." We asked our decision tree model to find the most important factors that predicted whether a student found social media useful for learning. Our thinking was simple: if YouTube habits came out on top as the main predictor, that would be clear evidence of the halo effect in action.

Audio recordings were transcribed verbatim and analyzed using Braun and Clarke's reflexive thematic analysis [16]. This involved familiarization with the data, generating initial codes, developing themes, and reviewing and defining themes. To ensure trustworthiness, a second researcher independently reviewed the thematic framework, and transcripts were cross-checked against original recordings.

Ethical Considerations and Limitations

Ethical approval was obtained from the Institutional Review Board at the University of Kerbala. All participants provided informed consent, and anonymity was strictly maintained. The cross-sectional design and convenience sampling from a single institution limit the generalizability of findings. The use of self-reported data may be subject to recall and social desirability biases. Future multi-centre studies across different cultural and curricular contexts are needed to validate and extend these findings.

Results

Our investigation revealed a deep integration of digital platforms into the self-directed learning (SDL) practices of final-year medical students. The findings from our mixed-methods approach converge to illustrate the central role of YouTube as a primary educational tool, the distinct but complementary function of social media, and the complex interplay between their usage and perceived learning outcomes.

Quantitative Findings: Platform Usage and Effectiveness

Our quantitative analysis showed that while both YouTube and social media are frequently used, there is a clear distinction in how they are valued for learning. A substantial majority of students (85%, n=102) reported frequent use of YouTube, dedicating an average of 4.5 hours per week (SD = 2.1) to core content like medical lectures (92%) and anatomy tutorials (75%). Social media was also a prominent tool, with 78% (n=94) of students using it frequently, primarily on Instagram (82%) and Facebook (70%).

However, the perceived value of these platforms diverged significantly. An overwhelming 90% (n=108) of students rated YouTube as highly effective, with 72% (n=86) attributing significant learning improvements to its use. In contrast, social media's perceived effectiveness was notably lower, with 65% (n=78) rating it as effective. This stark contrast is visually summarized in **Figure 1.**

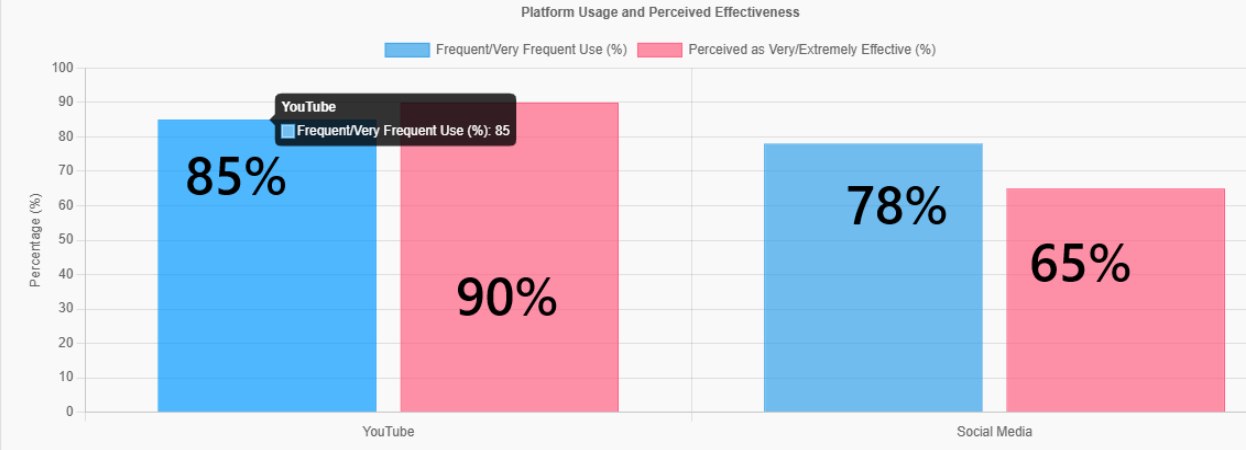


Figure 1: Comparison of Usage Frequency and Perceived Effectiveness of YouTube vs. Social Media

Comparison of platform usage and perceived effectiveness among final-year medical students (N=120). While both platforms are used frequently, YouTube is perceived as significantly more effective for learning.

Inferential statistical testing confirmed these observations. A Chi-Square test revealed a statistically significant association between the frequency of YouTube use and positive learning outcomes, indicating that greater engagement correlated with greater perceived academic benefit. Conversely, no such association was found for social media. Furthermore, a Mann-Whitney U test confirmed that YouTube was perceived as a significantly more effective learning tool than social media. The results of these key statistical tests are detailed in **Table 1.**

Table 1: Summary of Inferential Statistics

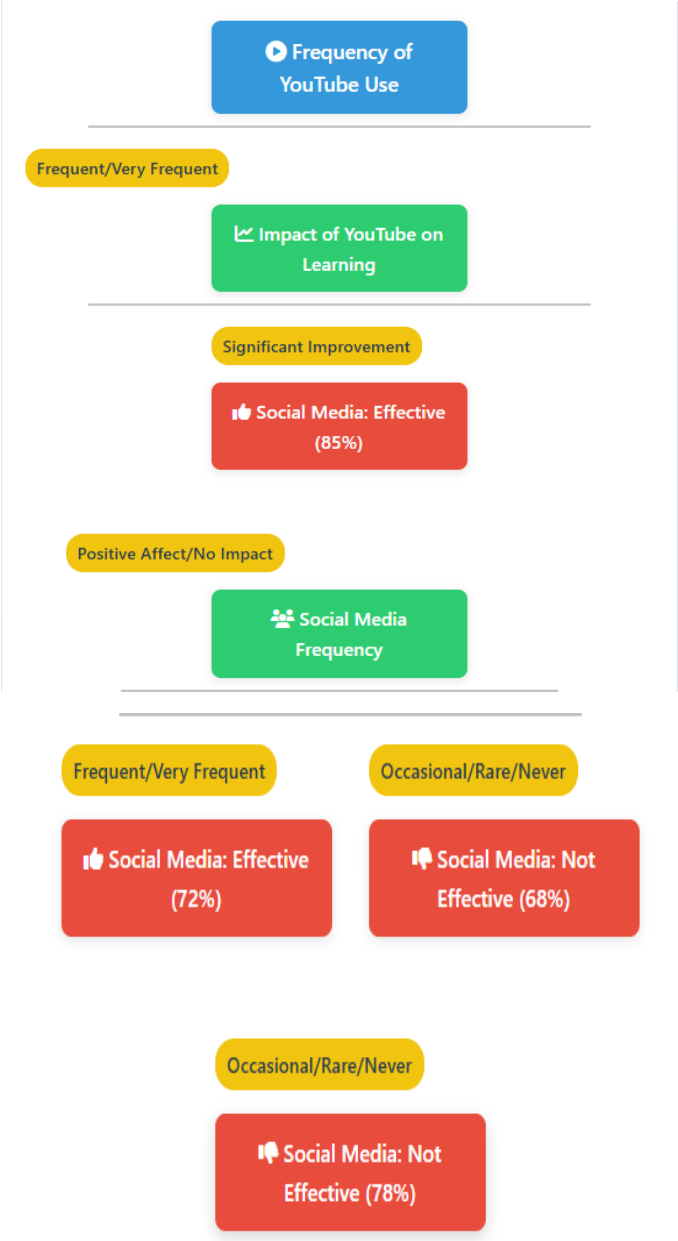
Analysis	Test	Statistic	df	p-value	Interpretation
YouTube Frequency vs. Learning Impact	Chi-Square	25.34	12	.013	Significant small-moderate association
Social Media Frequency vs. Learning Impact	Chi-Square	16.78	12	.158	Not significant
YouTube vs. Social Media Effectiveness	Mann-Whitney U	1282.5	N/A	<.001	YouTube rated significantly higher

To further explore these perceptions, a decision tree model was developed to predict the perceived effectiveness of social media. The model performed with high accuracy (83.33%) and revealed a striking finding, as illustrated in **Figure 2**. The most influential predictors of a student's perception of social media's effectiveness were not related to social media itself, but rather to their engagement with YouTube. This suggests a "halo effect," where positive experiences on YouTube create a favorable disposition toward other digital learning tools.

Decision Tree Model: Predicting Social Media Effectiveness

The "Halo Effect" of YouTube on Medical Students' Perceptions

This visualization demonstrates how positive experiences with YouTube influence students' perceptions of social media as an effective learning tool.



Decision tree model predicting perceived effectiveness of social media for learning. The model achieved 83.33% accuracy, with YouTube usage frequency being the primary predictor.

Interpretation

The decision tree shows that students who use YouTube frequently and experience significant learning improvement are highly likely (85%) to perceive social media as effective for learning.

This demonstrates the "halo effect" where positive experiences with one platform (YouTube) transfer to perceptions of other digital tools (social media).

Figure 2: Decision Tree Model Predicting Perceived Effectiveness of Social Media
A simplified decision tree model illustrating the key predictors for whether a student perceives social media as an effective learning tool. The model demonstrates a "halo effect," with YouTube usage frequency being the primary predictor. The model achieved 83.33% accuracy.

Qualitative Findings: The Student Experience
Focus group discussions provided rich context for the quantitative data, yielding five primary themes that capture the nuanced student experience with these digital tools. These themes are summarized in **Table 2** and elaborated below.

Table 2: Key Qualitative Themes and Illustrative Quotes

Theme	Definition	Illustrative Quote
Accessibility & Convenience	On-demand, self-paced access supports SDL.	"I can watch a lecture on YouTube anytime, even at 2 am."
Enhanced Understanding	Visual/interactive media deepen comprehension.	"Animations help me visualize complex processes."
Peer Collaboration	Social platforms facilitate community learning.	"We share videos and ask questions in our group."
Quality & Reliability Concerns	Variable accuracy requires appraisal skills.	"Not everything on YouTube is accurate; check sources."
Distraction & Time Management	Attention drift and time costs can hinder SDL.	"It's easy to get sidetracked by non-educational videos."

Discussion

Our mixed-methods design reveals that digital tools are not peripheral supplements but are integral to final-year medical students' processes of knowledge acquisition, peer collaboration, and learning management. Our findings place YouTube at the centre of didactic learning, consistent with its characterization as a versatile visual library [11, 13]. Social media, while used regularly, functions primarily as a collaborative space for peer support and community building [7, 8], explaining its lower rating for direct learning effectiveness.

The most significant and novel finding is the predictive relationship between YouTube use and perceptions of social media. The decision-tree model suggests a **"halo effect"**[17], where a student's positive experience with YouTube—a platform perceived as highly effective—positively biases their perception of other digital tools, including social media. This phenomenon can be interpreted through several lenses: as a classic cognitive bias where a positive attribute (YouTube's value) influences the evaluation of a related entity (social media) [17]; as a "gateway effect," where mastery of a primary platform builds digital literacy and confidence to explore others; or as a reflection of transferred self-regulation skills [18]. Proficiency on a primary digital platform like YouTube may foster a generalized positive disposition toward other forms of online learning.

This insight helps resolve the apparent contradiction of high social media usage coupled with lower perceived effectiveness. Students use it for a different purpose—connection, not content mastery. Educators can leverage this by strategically leveraging each platform's strengths: YouTube for curated didactic content and social media for fostering learning communities and peer-to-peer interaction.

The qualitative findings underscore both the immense value and the inherent challenges of these tools. While they offer unparalleled accessibility and enhance understanding [13], they demand advanced skills in critical appraisal [19] and self-regulation [18] to mitigate risks of misinformation and distraction.

Our findings align with and extend the current understanding of digital platform usage in medical education. The predominant use of YouTube for didactic learning (85%, n=102) corroborates previous research by Pickering and Swinnerton (2019), who identified video-based resources as essential for modern medical education. However, our study provides novel insights by demonstrating that this preference extends beyond simple content delivery to influence perceptions of other educational technologies.

Perhaps our most interesting finding was this "halo effect," and it wasn't just a vague feeling. our decision tree model clearly pointed to it. The model showed that how a student felt about YouTube was the single biggest predictor of how they felt about using *social media* for learning. While Thorndike's (1920) original conceptualization focused on interpersonal judgments, our application to educational technology reveals how positive experiences with one platform can create generalized positive dispositions toward other digital tools. This finding contrasts with earlier studies by Farnan et al. (2008), who primarily emphasized the risks of digital platforms, suggesting instead that positive experiences can create beneficial spillover effects.

Our quantitative results showing social media's lower perceived effectiveness (65%, n=78) despite high usage (78%, n=94) align with Cheston et al.'s (2013) systematic review, which noted the platform's primary strength in facilitating communication rather than content delivery. However, our mixed-methods approach provides deeper insight, revealing that students consciously utilize different platforms for distinct purposes—YouTube for knowledge acquisition and social media for community building.

The qualitative themes regarding information quality concerns support Batt and Cummins' (2016) emphasis on the need for critical appraisal skills. Our findings extend this by demonstrating that students are actively developing these skills independently,

suggesting an opportunity for educators to build upon existing student practices rather than introducing entirely new frameworks.

The high frequency of YouTube usage (85%, n=102) for anatomy learning specifically supports Damayanti and Juliawati's (2024) findings while demonstrating the consistency of this pattern across different educational contexts. The convergence of our quantitative and qualitative data provides stronger evidence for YouTube's central role than previous single-method studies.

Our study also addresses gaps in the literature regarding final-year medical students' digital habits. While previous research has focused on earlier stages of training, our findings demonstrate that these students have sophisticated, well-established patterns of digital platform use that directly support their transition to clinical practice. This aligns with Nasir et al.'s (2024) emphasis on SDL as a critical skill for practicing physicians but provides specific evidence about how digital tools facilitate this development.

It's also important to remember that our findings come from just one university in Iraq. The experience for students elsewhere could be quite different. Simple things like the speed and cost of internet, the way the curriculum is taught, or even cultural attitudes toward social media can all play a big role in how these tools are used. Because of that, our results might not apply directly to all medical schools or student populations.

The challenges identified—particularly regarding distraction and time management—echo concerns raised by Torous and Roberts (2017) but frame them as manageable obstacles rather than inherent limitations of digital tools. This perspective shift represents an important evolution in understanding how to effectively integrate technology into medical education.

Its single-institution, cross-sectional design limits generalizability, and self-reported data may be biased. Future longitudinal and multi-institutional studies are needed to track the evolution of this halo effect and to test targeted pedagogical interventions, such as flipped classrooms using curated playlists or assignments requiring the creation of educational content [9].

Conclusion

Final-year medical students have deeply integrated digital platforms into their learning ecosystems. YouTube serves as a primary, highly effective tool for content mastery, while social media facilitates essential peer collaboration. The discovery of a "halo effect," whereby positive experiences with YouTube boost perceptions of social media, is a crucial insight for medical education. It argues for a holistic digital strategy that moves beyond platform-specific recommendations. Educators should formally integrate these tools into the curriculum, focusing on cultivating critical digital literacies—especially content evaluation and time management—on trusted platforms. By doing so, we can harness students' existing digital habits to build a sustainable foundation for lifelong learning throughout their clinical careers.

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