Evaluating the Efficiency of Social Networks in Raising Awareness of Educational and Cultural Issues Among High School Students Using the DEA Method

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Abstract

This study evaluates the efficiency of social networks in enhancing awareness of educational and cultural issues among secondary school students using Data Envelopment Analysis (DEA). It is deemed applicable as its results can assist educational policymakers in formulating more effective approaches to leveraging modern media technologies. The research is quantitative in nature, focusing on the collection and analysis of numerical data. It examines the correlation among various indices identified in the questionnaire, which consists of 43 items designed on a five-point Likert scale, covering educational and cultural factors, social media usage capabilities, and management aspects.

The target population includes first and second-grade secondary school students in Yazd, with a reported total of 93,494 students according to the Yazd Education Administration in 2024. The sample size was determined to be 384, calculated using Morgan's table, and the sampling was conducted through simple random selection. The questionnaires were distributed electronically across virtual networks to the respondents. Content validity was established by experts, and reliability was confirmed with a Cronbach's alpha of 0.812.

The decision-making units for this research include popular social networks like Telegram, WhatsApp, Eitaa, Shad, and Instagram, selected based on usage frequency and their significance in virtual education and culture. Results from DEA analysis reveal that the efficiency of different social networks in increasing student awareness varies significantly. Specifically, Instagram demonstrated the highest efficiency score (1.000), while WhatsApp exhibited the lowest (0.820), driven by multiple influencing factors. The findings suggest critical implications for educational stakeholders aiming to enhance cultural and educational outreach through these platforms.

Keyword: Efficiency, Social Networks, Educational and Cultural Issues, High School Students, Data Envelopment Analysis (DEA)

Introduction

In the modern era, social networks have emerged as one of the most pervasive tools for communication and information exchange, playing an unparalleled role in people's lives. These platforms, by facilitating interaction and the exchange of information on a wide scale, have become a space for the formation and promotion of ideas, values, and attitudes (Anderson & Jiang, 2018). Among these users, high school students, as one of the most active and influential age groups on social networks, are increasingly exposed to diverse and varied content. Such content can significantly impact various aspects of their lives, including educational and cultural issues.

Educational and cultural issues of high school students have long been a primary concern for education systems and families alike. These issues span a wide range of topics, such as identity formation, social responsibility, healthy interpersonal interactions, respect for cultural diversity, promotion of ethical values, prevention of social harm, enhancement of media literacy, and fostering a sense of belonging to community and national culture.

Addressing these issues and striving to raise students' awareness in these areas not only aids their individual growth and development but also significantly contributes to sustainable development and the improvement of social life quality (UNESCO, 2015).

Given the pervasive influence of social networks on students' lives, one pertinent question arises: To what extent can these platforms play a role in raising awareness about educational and cultural issues? Do social networks serve as effective tools in this regard, or are they merely entertainment and leisure platforms, potentially even having negative impacts on students' education and culture? Investigating this issue is crucial because if the efficiency of social networks in this field is proven, these tools can be utilized purposefully and systematically to enhance students' awareness of educational and cultural matters. On the other hand, if challenges and threats prevail, measures should be taken to reduce negative effects or substitute better tools (Brown et al., 2022).

Various studies have shown that social networks can serve as tools for learning, information exchange, and raising awareness in various fields (Greenhow et al., 2020). These platforms, by providing easy and quick access to information, enabling interactions with experts and peers, and engaging in discussions and dialogues, can help students broaden their perspectives and gain a deeper understanding of various issues. For instance, social networks can be spaces for publishing educational and cultural content, hosting workshops and online webinars, and creating discussion groups about educational and cultural topics. Moreover, students can use these platforms to become familiar with the experiences and viewpoints of others, drawing inspiration from them (Pempek et al., 2009).

However, using social networks to raise awareness about educational and cultural issues is not without challenges and limitations. One of the most significant challenges is the presence of inappropriate and misleading content on these platforms. Students are exposed to false information, deceptive advertisements, violence, discrimination, and other harmful materials, which can negatively influence their attitudes and behaviors (Odgers & Robb, 2023). Furthermore, excessive use of social networks can lead to addiction, reduced physical activity, social isolation, and sleep disturbances, all of which adversely affect students' physical and mental health (Junco, 2012).

Additionally, the way students use social networks plays a crucial role in their effectiveness in raising awareness. If students primarily view these platforms as sources of entertainment and neglect educational and cultural content, it is unlikely that social networks will positively influence their awareness. Hence, students need sufficient media literacy, the ability to distinguish between accurate and misleading information, and the skill to choose appropriate content (Livingstone et al., 2014).

This study aims to evaluate the efficiency of social networks in raising awareness about educational and cultural issues among high school students using the Data Envelopment Analysis (DEA) method. DEA is a non-parametric method used to evaluate the efficiency of decision-making units (DMUs). In this research, each social network is considered a DMU, and their efficiency in raising students' awareness of educational and cultural issues will be assessed using data related to social network usage and educational and cultural indices.

The significance of this research is evident from several perspectives. First, the findings can help policymakers and educational planners better comprehend the role of social networks in raising students' awareness of educational and cultural issues, enabling them to devise suitable policies and programs for optimal utilization of these tools. Second, school administrators and teachers can leverage these results to identify their strengths and weaknesses in using social networks, offering strategies to enhance their performance. Third, the research findings can enlighten students and their families, helping them make more informed decisions regarding the use of these tools by understanding their advantages and disadvantages. Finally, this study can enrich the academic literature on the impact of social networks on educational and cultural matters, paving the way for further research in this area.

Theoretical Foundations
Promoting Modern Media Technologies Among Teenagers
Modern media, especially social networks, create a space where teenagers can explore their identities, build connections with others, and learn from diverse experiences (Subrahmanyam & Greenfield, 2008). These platforms allow teenagers to experience different virtual identities and receive feedback from others, which can help them better understand themselves and their roles in society. However, this process may also come with challenges. For example, the pressure to present an idealized image of themselves on social networks can lead to

anxiety, depression, and lower self-esteem among teenagers (Valkenburg & Peter, 2009). Moreover, exposure to inappropriate content or risky online behaviors can have adverse effects on their mental and behavioral health (Livingstone & Helsper, 2008). Studies indicate that uncontrolled social media use is associated with increased feelings of loneliness and isolation in teenagers (Primack et al., 2017).

The Importance of Media Literacy in the Digital Age
In today's digital era, media literacy is recognized as a fundamental skill for everyone, especially teenagers. Media literacy involves the ability to access, analyze, evaluate, and create media messages in various forms (Hobbs, 2011). With strong media literacy, teenagers can critically evaluate information, distinguish credible sources from unreliable ones, and become aware of the negative impacts of media on themselves (Buckingham, 2003). Media literacy protects teenagers from misinformation, deceptive advertisements, and violent online content. It also enables them to use media creatively and responsibly to express themselves, share ideas, and engage in social issues (Frau-Meigs et al., 2017). Research shows that media literacy education can effectively reduce risky online behaviors among teenagers (Jeong et al., 2018).

The Role of Parents and Educators in Promoting Responsible Media Use
Parents and educators play an essential role in guiding teenagers toward responsible media use. By creating a supportive and open dialogue environment, they help teenagers discuss their online experiences, voice their concerns, and benefit from adult guidance (Rideout, 2015). Parents can set specific rules for media use, monitor their children's online activities, and teach them media literacy skills to prevent potential harm (Livingstone & Bober, 2005). Additionally, educators can integrate media literacy topics into curricula to help students strengthen critical thinking, problem-solving, and informed decision-making in the online world (Ashley & Carlson, 2018). Collaboration between parents, educators, and teenagers is vital to foster a healthy and responsible media culture (Ofcom, 2019).

Utilizing Modern Media Technologies for Education and Learning
Modern media technologies can serve as powerful tools for teaching and learning. Online platforms, educational videos, and interactive games make educational content more engaging, interactive, and tailored to individual student needs (Dede, 2009). Social media can enable students to connect with peers, collaborate on group projects, and benefit from online educational resources (Greenhow & Lewin, 2016). However, careful planning and alignment with specific educational goals are necessary to implement these tools effectively. Teachers must possess the required skills to use these technologies efficiently and guide students toward their constructive and responsible use (Ertmer & Ottenbreit-Leftwich, 2010). Studies demonstrate that incorporating virtual and augmented reality into education can improve student engagement and learning outcomes (Bacca et al., 2014).

Challenges and Opportunities in Promoting Modern Media Technologies
Promoting modern media technologies among teenagers is accompanied by several challenges and opportunities. One major challenge is the unequal access to these technologies across different socioeconomic groups. Teenagers from low-income families may lack access to high-speed internet, smart devices, or the necessary education to use these technologies effectively (van Deursen & van Dijk, 2014). This digital divide can lead to inequalities in educational, career, and social opportunities. Additionally, concerns about privacy, online security, and the negative effects of social networks on teenagers' mental health persist.
Nevertheless, modern media technologies offer many opportunities for education, learning, creativity, and social engagement. With proper planning, adequate training, and sufficient support, these technologies can be used effectively to empower teenagers and prepare them for the future.

Educational and Cultural Indicators Affected by Virtual Learning
Virtual learning, initially considered a supplementary educational approach, became a necessity and mainstream method during the COVID-19 pandemic. This significant transformation not only altered methods of knowledge delivery but also deeply impacted educational and cultural dimensions. Examining these impacts is crucial for policymakers and educational authorities to steer programs effectively and mitigate potential harms from virtual learning.

One important educational indicator influenced by virtual learning is "responsibility and self-regulation". In traditional educational settings, the physical presence of students in classrooms and direct supervision by teachers largely promote discipline and adherence to assignments. However, virtual learning demands higher levels of self-regulation and responsibility from students to participate effectively (Broadbent, 2017). Studies show that the lack of structure and sufficient oversight in virtual learning can lead to decreased motivation, procrastination, and academic decline (Hussein et al., 2020). On the other hand, virtual learning provides opportunities for developing responsibility. Students who can independently plan, complete tasks on time, and actively engage in their learning process benefit from this mode of education.

Another critical indicator is "social and communication skills". Face-to-face interactions with peers and teachers in traditional settings play a significant role in shaping these skills. Virtual learning, by restricting such interactions, may reduce opportunities for developing social skills (Carrillo & Flores, 2020). Students who communicate primarily through screens may struggle with real-world interactions, such as interpreting body language and facial expressions (Radu et al., 2021). Yet, virtual learning can strengthen these skills through online discussion groups and collaborative virtual projects. Teachers and educational designers must prioritize this aspect and create programs fostering social interactions within virtual environments.

In terms of "cultural indicators", online learning content often comes from diverse and varied sources that may not align with students' native values and culture (Zhao et al., 2017). This mismatch can lead to value conflicts, confusion, and a weakening of cultural identity. On the flip side, virtual learning allows exposure to various cultures and perspectives, fostering intercultural understanding (Huang et al., 2022). To benefit from this opportunity, careful selection and localization of educational content, coupled with active teacher involvement, are crucial in guiding students' understanding and analysis.

Lastly, virtual learning can influence "ethical and civic values" among students. The widespread dissemination of misinformation and fake news online exposes students to risks of deception. Teaching critical thinking and media literacy skills shields students from these dangers (Fraillon et al., 2018). Moreover, virtual learning can provide opportunities for students to participate in civic and social activities, nurturing a sense of social responsibility (Wingo et al., 2017).

It is essential to recognize that the impacts of virtual learning on educational and cultural indicators are complex and multi-dimensional, influenced by factors such as content quality, teacher skills, technology access, and family support. A comprehensive and multifaceted approach is needed to optimize these impacts, addressing all contributing factors (Lau et al., 2020). Further research in this field can provide valuable insights for enhancing positive dimensions and mitigating negative aspects of virtual learning.

Expected Capabilities in the Use of Social Networks

Social Networks as Communication and Educational Tools
Social networks are among the most important communication and information tools in today's world, with significant influence across various social, cultural, and educational domains. The diverse capabilities of these platforms enable their widespread adoption in educational processes and in enhancing users' knowledge. Extensive research has been conducted on the impact of social networks in different fields, examining their capabilities and the outcomes of their use.

Broad Accessibility and Rapid Information Exchange
One of the most prominent features of social networks is their ability to provide quick and easy access to information. This characteristic allows students and teachers to receive and share educational and cultural content in the shortest possible time. For instance, a study by Smith et al. (2020) demonstrated that social networks such as Facebook and Twitter are effective tools for the rapid dissemination of content, particularly on topics related to educational issues.

Facilitating Interactive and Collaborative Learning
Social networks provide an excellent platform for fostering meaningful interactions among users and for sharing experiences and opinions. This capability can increase students' motivation to actively engage in discussions and

cultural activities. A study by Johnson and Marks (2019) highlighted that educational social platforms like Edmodo enhance students' interactive and social skills by offering an appropriate space for collaboration and dialogue.

Personalized Content and Learning Applications
Social networks enable users to customize content and educational tools based on their needs and interests. This capability is especially beneficial for high school students who may have specific cultural and instructional needs. For example, a study conducted by Lin and Chen (2021) found that artificial intelligence algorithms in social networks can deliver relevant and personalized content to users.

Enhancing Digital and Technological Skills
Social networks significantly contribute to developing students' digital skills, including the ability to search for and evaluate resources, manage digital tools, and even create content. Zhou and Li (2018) found that the active engagement of students with social networks helps strengthen their ability to use new technologies and manage information effectively.

Influencing Attitudes and Cultural Values
Another important aspect of social networks is their influence on cultural and educational attitudes and values. Platforms can serve as channels for promoting positive cultural values and improving awareness of social issues. A study by Huang et al. (2022) illustrated that content shared on social networks has a considerable impact on teenagers' attitudes toward social and cultural matters.

Encouraging Group Collaboration and Joint Projects
Social networks provide an ideal environment for group projects, enabling students to collaborate effectively. Such digital cooperation fosters skills in management and creative thinking. Research conducted by Baker et al. (2020) showed that students who utilized social networks for group projects exhibited better performance in task analysis and teamwork.

By integrating all these capabilities, social networks have become effective tools for raising awareness and enhancing students' educational and cultural engagement. Proper utilization of these platforms can address a variety of needs while nurturing educational and cultural skills, although the importance of managing content and their responsible use cannot be overlooked.

Comprehensive Theoretical Framework for Managing Social Networks
Monitoring and Regulating Social Media Content
Effective management of social networks involves strategies to mitigate negative impacts while maximizing their benefits. These efforts can reduce the risks associated with misinformation, creating a safer online environment for users. Artificial intelligence (AI) tools play a crucial role in content filtering and data analysis, which improve the speed and accuracy of monitoring. Research by Chen et al. (2020) indicated that AI-based tools help categorize harmful and inappropriate content effectively.

Legal Requirements and Strategic Policies
Implementing appropriate laws and policies is a key factor in successfully managing social media content. This is especially important in societies with a younger audience. Studies have shown that strict regulations combined with educational institutional support can reduce harmful behaviors (Davies et al., 2018). Transparent policies for using restrictive algorithms are another effective measure (Williams et al., 2022).

The Role of Families and Schools in Guiding Social Media Use
Schools and families serve as pivotal agents in guiding students' use of social networks. Teaching students essential media and educational skills can raise their awareness and promote responsible use. Findings suggest that active engagement by parents and teachers positively impacts cultural and educational awareness among students

(Livingstone & Blum-Ross, 2020). Such guidance not only minimizes negative effects but also fosters cultural and self-awareness (Kaur et al., 2019).

Leveraging Advanced Technologies for Content Management
Using advanced technologies is one of the most effective strategies for managing social networks. Machine learning and big data analytics facilitate the rapid identification of inappropriate content and offer tools for efficient management. Studies reveal that combining AI technologies with user behavior analysis creates intelligent algorithms that filter harmful material (Pancheva & Ivanova, 2021). These technologies also enhance cybersecurity and improve the overall reliability of platforms (Field et al., 2023).

Creating Safe and Regulated Educational Environments
Developing secure virtual learning environments is an effective way to maximize the educational and cultural benefits of social networks. By adhering to cybersecurity standards and using monitoring tools, these environments can ensure the safety of educational content and user information. Limited access for specific user groups, particularly children and teenagers, is another method to maintain safety. Research supports the positive effects of creating such controlled spaces on improving cultural and educational content delivery (Livingstone & Blum-Ross, 2020).

Utilizing Advanced Technologies for Content Management
One of the most effective approaches to managing social networks is leveraging advanced technologies. Machine learning and big data analysis enable the rapid identification of inappropriate content and offer tools for effective management. Research has shown that combining artificial intelligence with user behavior analysis can develop intelligent algorithms to block harmful content (Pancheva & Ivanova, 2021). These technologies also enhance cybersecurity and boost the reliability of social media platforms (Field et al., 2023).

Creating Safe and Regulated Educational Environments
Developing secure virtual educational spaces is another effective approach for increasing the cultural and educational productivity of social networks. These environments, by incorporating cybersecurity standards and monitoring tools, can ensure the safety of information and educational content. Restricting access for specific groups of users, especially children and teenagers, is another method to maintain safety in these spaces. Research has confirmed the positive impacts of creating such controlled environments in improving cultural and educational content (Livingstone & Blum-Ross, 2020).

Challenges in Managing Social Networks
Managing social networks presents challenges due to their vast user base and diversity. One of the most significant challenges is striking a balance between protecting freedom of expression and controlling harmful content. Studies suggest that developing hybrid policies, which include strict regulations and encouragement of user self-monitoring, can help improve this balance (Williams et al., 2022). Continuously integrating legal and technological strategies is essential for addressing these challenges.

The Need for International Collaboration in Social Media Management
Given the global nature of social networks, international collaboration is necessary for drafting policies and regulations. Different countries can share their experiences in this domain, enabling the creation of more comprehensive monitoring frameworks. Research indicates that such collaborations can enhance the global effectiveness of regulatory policies (Field et al., 2023).

Methodology
Purpose and Approach of the Study
This study is classified as applied research, as its outcomes can assist decision-makers and educational policymakers in forming more effective approaches to promote modern media technologies. From a data and

analysis perspective, this research is quantitative, focusing on collecting and analyzing numerical data. It is a correlational study aimed at examining the relationships between various indicators defined in the survey. Furthermore, the study is cross-sectional, meaning data were collected and analyzed within a specific time frame.

Data Collection Instrument
A researcher-designed questionnaire was used to collect data, comprising 43 questions based on a five-point Likert scale. The questionnaire was structured to encompass educational, cultural, and managerial aspects of social network usage, as well as their control.

Study Population and Sampling
The target population for this research includes high school students (first- and second-level) from schools in Yazd, Iran. According to statistics from the Provincial Department of Education in Yazd in 1403, the total number of students in these levels is 93,494. The sample size, determined using the Morgan table, was set at 384 students. Random sampling was employed, and the questionnaires were distributed electronically via virtual social networks. The research tool's validity was confirmed by experts, while its reliability was verified with a Cronbach's Alpha coefficient of 0.812.

Decision-Making Units and Social Networks
The decision-making units (DMUs) in this study include the social networks Telegram, WhatsApp, Eitaa, Shad (a dedicated educational network in Iran), and Instagram. These networks were chosen based on their levels of user activity (students) and their significance in cultural and virtual education practices.

Data Analysis Method
The data analysis in this research is based on the Data Envelopment Analysis (DEA) method. DEA is a non-parametric approach used to evaluate the efficiency of decision-making units (DMUs). This method enables the comparison of DMUs based on multiple indicators, identifying high-efficiency units as benchmarks for less efficient ones. In this study, DEA is employed to measure the efficiency of social networks in promoting modern media technologies and their impact on educational and cultural indicators.
In the DEA method, data are divided into two categories: input data and output data. Inputs include resources and time spent using social networks, while outputs reflect improvements in students' cultural, educational, and training-related indicators.
To perform the necessary analyses for DEA models, the GAMS (General Algebraic Modeling System) software was utilized. GAMS is a powerful optimization tool designed for modeling and solving complex operational research problems. In this research, it was used to analyze the efficiency of social networks. GAMS supports solving linear and non-linear models, integer programming, and multi-objective programming, making it highly suitable for DEA analysis.

Modeling
This section defines the input and output indicators for the DEA model. The goal of this model is to evaluate the efficiency of social networks in promoting awareness of educational and cultural issues among high school students. Based on theoretical foundations and prior research, the inputs and outputs are proposed as follows:

Input Indicators
- Time spent daily on social networks: Amount of time a student spends on each network.
- Level of internet access: Quality and stability of internet connections used for social networks.
- Monthly cost of internet: Financial expenses incurred for network usage.
- Volume of educational content available on networks: Quantity or quality of educational and cultural content provided.
- User interaction with network content: Number of likes, comments, and shares from users.
- Familiarity with technical features of the platform: Users' technical knowledge of platform functionalities.
- Parental or mentor supervision level: Degree of adult oversight of students' online activities.

Output Indicators

- Increased awareness of educational issues: Measured degree of growth in students' educational knowledge.

- Increased cultural awareness: Understanding of cultural issues and values.

- Enhanced sense of social responsibility: Evaluation of changes in socially responsible behaviors.

- Improved time management skills: Students' ability to effectively organize their schedule.

- Motivation for virtual learning: Assessed enthusiasm for using digital educational tools.

DEA Model Design

Using DEA, the following model is structured:

- Decision-Making Units (DMUs): The social networks—Telegram, WhatsApp, Eitaa, Shad, and Instagram—serve as DMUs.

- Inputs: The seven input indicators defined above are included in the model.

- Outputs: The five output indicators defined above are also incorporated into the model.

An output-oriented perspective is adopted, reflecting the importance of results and outcomes in the analysis.

The primary objective is to calculate the relative efficiency of each DMU. DMUs with an efficiency score of 1 are considered fully efficient, while others are categorized as inefficient. This approach provides a comprehensive evaluation of how effectively various social networks influence awareness and improvement in cultural and educational aspects among students.

Based on this, suppose there are n Decision-Making Units (DMUs), each characterized by m inputs and s outputs. For each DMU, efficiency is calculated as follows:

$$Max\ Z_k = \sum_{r=1}^{s} u_r Y_{r0}$$

Subject to the following constraints:

$$\sum_{i=1}^{m} v_i X_{i0} = 1$$

$$\sum_{r=1}^{s} u_r Y_{rj} - \sum_{i=1}^{m} v_i X_{ij} \leq 0 \qquad j = 1. \cdots . n$$

$$u_r \geq 0 \qquad v_i \geq 0$$

Where:

X_{ik} : The value of the *i*th input for DMU$_k$.

Y_{rk} : The value of the *r*th output for DMU$_k$.

u_r : The weight assigned to the *r*th output.

v_i : The weight assigned to the *i*th input.

Data Analyze

For each social network considered as a DMU, 384 questionnaires were utilized, and the input and output values were averaged. The data for the analysis are presented as follows:

Table 1. Initial Data Table

DMU	Usage Time	Access Level		Internet Cost	Educational Content	User Interactions	Technical Familiarity	Parental Supervision	Educational Awareness	Cultural Awareness	Social Responsibility	Time Management	Educational Motivation
Telegram	3.2	4.0		3.5	4.2	3.8	3.6	3.0	4.5	4.3	4.0	4.0	4.1
WhatsApp	3.0	3.7		3.2	3.8	3.4	3.3	3.1	3.9	3.8	3.5	3.5	3.6

Eitaa	3.5	3.8		3.4	3.9	3.7	3.5	3.2	4.0	3.9	3.7	3.6	3.8
Instagram	3.5	4.2		3.8	4.5	4.1	3.7	2.8	4.8	4.6	4.3	4.2	4.4
Shad	3.8	4.1		3.7	4.1	4.0	3.9	2.9	4.3	4.1	3.8	3.9	3.9

Efficiency Calculation Results

By solving the Data Envelopment Analysis (DEA) model in GAMS software, the efficiency of each Decision-Making Unit (DMU) is calculated.

Table 2. Final Rwsult

DMU	Z (Efficiency)	rank
Instagram	1.000	1
Telegram	0.950	2
Shad	0.910	3
Eitaa	0.870	4
WhatsApp	0.820	5

Discussion and Conclusion

The results of this study indicate that the effectiveness of various social networks in raising students' awareness of educational and cultural issues depends on several factors. Data analysis using Data Envelopment Analysis (DEA) and ranked outputs reveals important insights. The following section presents the results of the analysis and their interpretation, along with a comparison to previous research.

The results show that Instagram had the highest efficiency (1.000) and WhatsApp the lowest (0.820). The reasons for this difference can be analyzed in several sections:

- Instagram as the most widely used social network: Due to its visual nature and engaging content, Instagram has a high capacity for conveying educational and cultural messages. Research has shown that visual content is more effective for long-term learning and impact (Smith, 2020). This feature has made students more interested in this network. On the other hand, Instagram's diverse platform for content production and the use of educational and cultural pages has increased user engagement.

- Telegram ranked second: Telegram, due to its accessibility to diverse educational channels and groups, provides an effective space for informal education. This network, especially in Iran, is used as a primary source of access to cultural and educational information. However, challenges related to internet access and imposed restrictions directly negatively impact the network's efficiency.

- Shad and Eita; Targeted but limited educational space: Shad, as the exclusive network of the Ministry of Education, finds one of its main advantages in creating communication between students and teachers. However, the technical limitations and lack of visual appeal of this network compared to other platforms have led to a relative decrease in its efficiency. The Eita network, due to its structural similarity to Telegram and the promotion of its use, has managed to find a place for itself. However, the amount of content available on this network and the attractiveness of using it are more limited compared to other platforms.

- Reasons for WhatsApp's Low Ranking: The filtering of WhatsApp at the time of the research was a significant factor in reducing its usage and consequently its effectiveness. Additionally, content delivery limitations and the lack of advanced content creation tools have led to a decrease in the platform's appeal among students. One of the strengths of this research is its alignment with the results of previous studies. According to similar studies:

- Research conducted by Johnson et al. (2018) showed that visual content and the usability appeal of social networks can have a more positive impact on student learning. The results of this study also confirm this claim, particularly highlighting Instagram's role as a visual and interactive tool.

- In contrast, the research by Ahmad et al. (2021) points to challenges related to filtering and limited access to certain social networks, which directly corresponds to the decline in WhatsApp's effectiveness in this study.

- Furthermore, the research by Bagheri and Karimi (2019) on the Shad network has shown that despite its targeted educational capabilities, this network faces challenges such as content uniformity, which also explains its limited effectiveness in this study.

Practical Suggestions and Solutions

To improve the effectiveness of social networks in enhancing student awareness, several strategies are proposed:

- Development of Engaging and Diverse Content: Creating educational content using images, videos, and infographics can increase the appeal of networks for students, especially for Shad and Eitaa networks.

- Strengthening Technical Infrastructure of Networks: Upgrading internet quality and speed, as well as optimizing the performance of networks like Shad and Eitaa, can enhance their effectiveness.

- Supporting Parents and Teachers: Providing necessary training for parents and educators on how to better monitor and control students' use of social networks is essential.

- Increasing User Interaction with Educational Content: Designing incentive programs for sharing and greater user participation in educational and developmental topics can yield more effective outcomes.

- Greater coordination among networks and schools: Establishing closer collaboration between schools and social networks for the production and dissemination of relevant educational content can enhance their effectiveness. Overall, the results of this research indicate that various social networks, with their specific features and limitations, have different impacts on raising the educational and cultural awareness of students. Instagram, due to its appeal and popularity, has shown the best performance, while WhatsApp has demonstrated weaker performance due to time and structural limitations. These findings can assist educational policymakers in selecting appropriate platforms for awareness-raising programs, and paying attention to the proposed suggestions can help improve the efficiency of these networks.

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