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Exploring Sociocultural Patterns in Evolving Educational Practices: Arab Students' Use of Generative AI in Accomplishing Academic Assignments

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ABSTRACT

Recent advances in educational technology have reshaped learning practices worldwide, yet students' engagement with these innovations remains deeply influenced by their cultural and social contexts. As tools like Generative AI become more accessible, understanding how students from different cultural backgrounds approach their use has become crucial. This study explores the sociocultural patterns shaping Arab high school students' use of generative AI in accomplishing academic assignments - tasks that some students still perceive as a compulsory burden rather than meaningful opportunities for learning. Adopting a descriptive survey design, the study involved 450 male and female high school students from Egypt, Saudi Arabia, and Jordan. Data were collected using a questionnaire designed to capture five sociocultural patterns of AI use: Instrumental Pattern, Learning-Oriented Pattern, Ethically-Conscious Pattern, Dependency Pattern, and Peer-Influenced Pattern. The results revealed that the Dependency Pattern and Peer-Influenced Pattern were the most dominant among students, while the Instrumental, Learning-Oriented, and Ethically-Conscious Patterns appeared less prevalent. Paradoxically, these less common patterns are the ones most closely aligned with deeper learning and critical engagement, which underscores a disconnect between the educational potential of generative AI and how students currently perceive and use it. This suggests that many students view AI primarily as a quick shortcut or a social trend rather than as a meaningful learning tool. Such tendencies may stem from a school culture where assignments are treated as obligatory tasks to be completed rather than opportunities for intellectual growth, highlighting a cultural gap in how generative AI is integrated into learning contexts in the Arab world.

Keywords: Generative AI, Sociocultural Patterns, Academic Assignments, Educational Change, Arab Students.

INTRODUCTION AND LITERATURE REVIEW

Over the past few years, the rapid emergence of Generative AI has triggered profound transformations in educational practices. Classrooms that once relied on traditional instruction and fixed learning resources are now becoming more dynamic, personalized, and technology-driven (Chan et al., 2023). Generative AI tools have

introduced new possibilities for students to access knowledge, generate ideas, and produce creative outputs, reshaping how learning is experienced and how educational tasks are approached (Wood & Moss, 2024).

One of the most visible areas of this transformation is students' use of generative AI to support their academic assignments and homework tasks (Hmoud et al., 2024). These tools can help students brainstorm, draft, edit, and refine their work quickly and efficiently, offering immediate feedback and expanding their access to information beyond textbooks. However, students' approaches to using such tools vary widely (Gogh & Kovari, 2025). While some engage with AI in ways that promote deeper understanding and personal growth, others treat it merely as a shortcut-a quick route to completing tasks without meaningful learning. This divide reflects a tension between utilitarian use for immediate gain and developmental use for authentic learning advancement (Dange & Lopez, 2025).

Importantly, students' approaches are not shaped in isolation. They are deeply influenced by their sociocultural contexts, including the expectations of families, the norms of their schools, and the attitudes of their peers (Hou et al., 2025). Peer groups, in particular, can normalize certain patterns of use, making AI either a shared social trend or a personal learning tool. These influences can determine whether students view generative AI as a supportive companion that enhances learning or simply a crutch that fosters dependency and undermines self-effort (Levin et al., 2024).

Teachers also play a crucial role in shaping these patterns. Their stance toward AI-generated work-whether they encourage thoughtful integration, remain skeptical, or focus on verifying authenticity-can strongly affect how students perceive the legitimacy and educational value of these tools (Baidoo-Anu & Ansah, 2023). In contexts where teachers primarily act as gatekeepers who detect and penalize AI use, students may hide their engagement or use AI superficially. In contrast, when teachers guide students to use AI responsibly and critically, they can foster more meaningful and reflective learning behaviors (Chan & Tsi, 2024).

Understanding these dynamics is essential. As generative AI becomes increasingly embedded in educational environments, it is no longer enough to ask whether students are using these tools; the more pressing question is how and why they are using them in particular ways-and how their cultural and social environments shape these choices. Exploring these patterns can offer valuable insights into how to design learning environments that harness the potential of generative AI while nurturing students' critical thinking, creativity, and responsibility.

Discussions on incorporating generative AI into classroom practice focused on practical integration and instructional design. Yee et al., (2023) offered ready-to-use examples of AI-based assignments for classroom use. Their work emphasized that carefully designed tasks can shift students from passive task completion toward active engagement. This perspective is relevant to the present study because it highlights how assignment design can influence students' patterns of AI use, potentially steering them toward deeper learning rather than surface-level use.

Around the same time, Murray and Williams (2023) explored business students' ethical perspectives on using generative AI in assignment writing. They found that students appreciated AI's efficiency but also felt conflicted about academic honesty, originality, and authorship. This aligns with what the current study describes as the Ethically-Conscious Pattern, showing how students may oscillate between the convenience of AI and their responsibility to produce authentic work.

Moving into 2024, several studies began addressing the sociocultural and contextual dimensions of AI use. Essien et al. (2024) analyzed generative AI engagement in Nigerian higher education using activity theory, revealing how students' use of AI is embedded in cultural expectations, institutional norms, and peer influence. This is especially relevant to the present study's focus on sociocultural patterns, showing that AI use is not merely an individual decision but a socially shaped practice.

Rosvoldsve (2024) examined how upper secondary teachers assess student writing in the age of AI. The study showed that teachers' judgments are now influenced by concerns about authenticity and student effort, shifting their role from evaluators to gatekeepers. This connects to the present research by illustrating how teachers' attitudes and assessment practices indirectly shape how students engage with AI.

In terms of instructional innovation, Ganjoo et al., (2024) tested AI-integrated assignments in graduate online science courses and found that these tasks fostered collaboration, curiosity, and engagement, yet also raised ethical concerns about fairness, authorship, and integrity. This underscores how assignment design can either encourage exploratory engagement or reinforce shortcut-oriented behavior, which is central to the present study's aim of examining different patterns of use.

Similarly, Umirov (2024) argued that rather than fearing AI, educators should focus on redesigning assignments to make them more authentic, interactive, and creativity-driven. This perspective supports the current study's rationale that students' use patterns are shaped by the nature of the tasks they are given, and that redesigning these tasks could move students from dependency and peer-driven patterns toward learning-oriented and ethical patterns.

Ismail et al. (2024) examined the extent to which university students adhere to standards for AI-generated writing. Their findings showed that students often demonstrated low to moderate levels of adherence, reflecting limited awareness of academic norms related to AI use and a tendency to view AI tools as practical aids rather than learning partners. This insight reinforces the rationale for the present study, which seeks to move beyond measuring compliance or skill and instead explore the sociocultural patterns underlying students' use of Generative AI in accomplishing assignments.

In 2025, attention turned more directly to students' perspectives and depth of engagement. Kim et al., (2025) found that students appreciated the efficiency of AI-assisted writing but were unsure about its impact on learning and originality, often oscillating between dependence and development. This maps closely onto the patterns explored in the present study, especially the contrast between Dependency and Learning-Oriented patterns.

Another important perspective comes from Gogh and Kovari (2025), who examined how the rise of Generative AI is reshaping the very concept of homework. Their study framed homework in the AI era as oscillating between cheating, challenge, or change, and found that students' attitudes depend greatly on how meaningful and personally relevant the tasks are. This aligns closely with the current study's focus on students' sociocultural patterns of AI use, suggesting that when assignments are perceived merely as routine obligations, students are more likely to adopt surface or dependency patterns, whereas meaningful and challenging tasks may foster learning-oriented and ethical patterns of engagement.

Collectively, these studies converge on the idea that students' engagement with generative AI is not monolithic. It emerges from the intersection of personal motivations, ethical considerations, sociocultural pressures, and instructional design, which aligns directly with the present study's aim: to explore the sociocultural patterns that shape how Arab high school students use generative AI in accomplishing academic assignments. While the earlier study focused on what students do, the current study digs deeper into why they adopt certain patterns of use and how their cultural and social environments shape these patterns.

In the present study, students' use of Generative Artificial Intelligence in accomplishing academic assignments is examined through a sociocultural lens. Rather than judging whether such use is right or wrong, the study seeks to understand how students engage with these tools and why they do so in particular ways, considering the cultural and social contexts that shape their behaviors.

To achieve this, the study adopts a framework consisting of five distinct sociocultural patterns that capture the diverse ways in which Arab high school students approach the use of generative AI. These patterns are: Instrumental Pattern, Learning-Oriented Pattern, Ethically-Conscious Pattern, Dependency Pattern, and Peer-Influenced Pattern. Each pattern reflects a unique combination of motivations, values, and social influences, allowing the study to explore students' practices as part of broader sociocultural dynamics rather than isolated individual actions.

Conceptual Definitions of the Five Patterns

Instrumental Pattern: This pattern reflects students' tendency to use AI as a practical tool to accomplish tasks efficiently and achieve high grades, with minimal focus on deep understanding or personal learning development. It emphasizes goal-oriented and result-driven use of AI rather than cognitive engagement.

Learning-Oriented Pattern: This pattern represents students' use of generative AI as a supportive learning resource to enhance understanding, skills, and critical thinking. Students in this category actively revise, interpret, and build upon AI-generated outputs to foster their own learning.

Ethically-Conscious Pattern: This pattern refers to students who approach generative AI use cautiously, guided by ethical, religious, or academic integrity values. They aim to avoid plagiarism, maintain originality, and show personal effort when using AI in academic assignments.

Dependency Pattern: This pattern reflects students' overreliance on generative AI, often using it as their primary or sole method for completing assignments. It is associated with low self-initiative, limited independent thinking, and difficulty completing tasks without AI assistance.

Peer-Influenced Pattern: This pattern highlights students' socially driven use of generative AI, shaped by peer norms and group dynamics. Students adopt AI tools mainly because their classmates or friends use them, seeking social acceptance or conformity within their peer group.

Statement of the Problem

Although Generative AI tools have the potential to transform learning by offering students vast knowledge resources and personalized support, many students appear to use these tools merely as emergency aids to quickly complete assignments rather than as comprehensive learning companions (Dolinsky, 2025). Instead of engaging deeply with the content, they often treat generative AI as a shortcut to "get tasks done" and move on seeing

academic assignments as obligations to be cleared rather than opportunities to grow intellectually (Baidoo-Anu et al., 2025).

This superficial approach may be particularly shaped by prevailing sociocultural norms in Arab educational contexts. In many Arab societies, education has traditionally emphasized performance, grades, and conformity over exploration and creativity. When ChatGPT and similar platforms were first launched, several Arab countries initially chose to block or restrict them, largely out of fear of plagiarism and fabricated content. Such reactions may have unintentionally framed generative AI as a threat rather than a learning opportunity, influencing how both students and teachers perceive its legitimacy.

Furthermore, teachers' apprehension toward AI-generated work often focusing on detecting and penalizing its use can reinforce students' perception that these tools are risky or inappropriate for authentic learning. Instead of being encouraged to explore and critically evaluate AI-generated content, students may feel pressured to use it discreetly and solely to meet deadlines. As a result, little is known about how sociocultural forces shape the ways Arab students engage with generative AI: Do they use it as a tool for creativity, reflection, and knowledge-building-or merely as a convenient escape from effort? Addressing this gap is vital for understanding not just whether students use AI, but the patterns of use they adopt and the cultural logics that drive them.

Study Objectives

This study seeks to explore how Arab high school students engage with generative AI tools when accomplishing their academic assignments, and how their patterns of use are shaped by their cultural and social environments. Rather than judging whether such use is right or wrong, the study aims to understand the diversity of students' approaches and the factors that drive them. Specifically, the study aims to:

- Identify the dominant sociocultural patterns through which Arab high school students use generative AI in completing academic assignments.
- Examine the extent to which students adopt each of the five proposed patterns: Instrumental Pattern, Learning-Oriented Pattern, Ethically-Conscious Pattern, Dependency Pattern, and Peer-Influenced Pattern.
- Explore how these patterns reflect students' underlying cultural values, peer influences, and perceptions of school assignments (as either meaningful learning opportunities or routine obligations).
- Highlight potential gaps between the educational potential of generative AI and how students currently perceive and use it, to inform more culturally responsive teaching practices.

Study Questions

Building on the study's aim to explore the sociocultural patterns that shape Arab high school students' use of generative AI in accomplishing academic assignments, the following research questions were formulated:

- What sociocultural patterns characterize Arab high school students' use of generative AI in completing their academic assignments?
- To what extent do students exhibit each of the five proposed patterns Instrumental, Learning-Oriented, Ethically-Conscious, Dependency, and Peer-Influenced when using generative AI tools?
- How do students' cultural values, social norms, and peer influences shape the ways they engage with generative AI in their schoolwork?
- What do the identified patterns reveal about the cultural and educational contexts that frame students' attitudes toward generative AI?

METHODOLOGY

Research Design

This study set out to explore the sociocultural patterns that shape how Arab high school students use Generative AI in accomplishing their academic assignments. Given that the focus was on identifying existing patterns of behavior, understanding their underlying social and cultural drivers, and comparing their prevalence, a quantitative research design was adopted. Specifically, the study followed a descriptive–analytical methodology, which is widely recommended in educational and social sciences research when the goal is to describe current phenomena as they naturally occur and to interpret their meanings within context (Creswell, 2015). This approach allowed the researchers to collect data from a relatively large number of students and to examine variations in their responses in a systematic and comparable way.

The descriptive element of the design made it possible to capture the frequency and distribution of different patterns of AI use among students, while the analytical element enabled the team to interpret how these patterns might be influenced by sociocultural factors such as peer norms, school culture, and students' perceptions of assignments. In other words, this design did not aim to test causal hypotheses, but to map and explain existing tendencies and relationships as they appear in the real educational context.

To achieve this purpose, the study employed a structured questionnaire as its main data collection tool, designed around five key dimensions (patterns): Instrumental Pattern, Learning-Oriented Pattern, Ethically-Conscious Pattern, Dependency Pattern, and Peer-Influenced Pattern. These five dimensions were developed to represent the range of ways students might engage with generative AI from using it as a quick shortcut to embracing it as a meaningful learning resource.

Participants and Sampling

A total of 450 high school students participated in this study. They were recruited from three Arab countries Egypt, Saudi Arabia, and Jordan to capture a diverse yet culturally connected sample that reflects variations in educational systems, social expectations, and exposure to Generative AI tools. All participants were enrolled in grades 10 to 12 and included both male and female students.

To ensure fair representation, the study employed a stratified random sampling strategy. The sampling frame was organized around three primary strata: country, school type (public or private), and gender. Within each stratum, participating schools were first contacted through their administrations and briefed about the study's purpose. Schools that agreed to participate were asked to nominate classes from each grade level (10, 11, and 12). From these classes, students were then randomly selected using simple random draws to avoid researcher bias.

This multistage approach balanced intentional diversity with randomness, allowing the sample to represent a broad spectrum of students while preserving the objectivity needed in quantitative research. In addition to demographic information, students were also asked to report their self-perceived frequency of using generative AI tools (high, moderate, low), which helped classify their level of exposure to such tools. Including these background variables provided a richer lens for interpreting how cultural and social contexts might shape students' patterns of engagement with generative AI in their academic work.

Table 1: Demographic Characteristics of Study Participants (N=**450**)

Demographic Characteristic	Category	Frequency	Percentage
Country	Egypt	230	51.1%
	Saudi Arabia	130	28.9%
	Jordan	90	20.0%
School Type	Public	310	68.9%
	Private	140	31.1%
Gender	Male	225	50.0%
	Female	225	50.0%
Grade Level	Grade 10	140	31.1%
	Grade 11	160	35.6%
	Grade 12	150	33.3%
Frequency of AI Use	High	296	65.7%
	Moderate	123	27.33%
	Low	31	6.8%

Ethical Considerations

This study was conducted in accordance with accepted ethical standards for educational research. Participation was entirely voluntary, and students were informed that they had the right to withdraw from the study at any time without any negative consequences. Before completing the questionnaire, all participants were provided with a clear explanation of the study's purpose, procedures, and expected time commitment. They were assured that their responses would remain anonymous and confidential, and that the data would be used only for research purposes. Because the participants were high school students, permission was obtained from school administrations, and informed consent was collected from both the students and their guardians before data collection began. No identifying personal information was requested in the questionnaire, and all data were stored securely. These steps were taken to ensure that students could participate freely, safely, and without pressure, and to respect their privacy and dignity throughout the research process.

Data Collection Instrument

The data for this study were collected using a structured questionnaire designed to explore the sociocultural patterns that shape Arab high school students' use of Generative AI in accomplishing their academic assignments. The instrument was built to go beyond simply asking whether students use these tools, and instead to uncover how they use them, why they do so in particular ways, and what cultural and social forces influence their choices.

The initial version of the questionnaire was informed by several influential international studies in this field, which helped shape its dimensions and items conceptually. For example, Essien et al. (2024) emphasized the role of sociocultural expectations and peer norms in shaping students' AI engagement, while Kim et al. (2025) explored students' ambivalence between the efficiency of AI-assisted writing and its impact on authentic learning. Likewise, Murray and Williams (2023) highlighted the ethical dilemmas students face when using AI tools, and Rosvoldsve (2024) showed how teachers' concerns about authenticity influence students' behaviors. In addition, Ganjoo et al. (2024) illustrated how embedding AI tasks in coursework affects students' curiosity and responsibility, and Ahlström (2025) documented the wide spectrum of students' AI use from superficial automation to deep creative engagement. Collectively, these studies provided the conceptual foundation for the five key patterns measured in this study: Instrumental, Learning-Oriented, Ethically-Conscious, Dependency, and Peer-Influenced. To ensure its content validity, the questionnaire was reviewed by nine independent experts in educational technology, curriculum, and psychology, who evaluated the clarity, relevance, and alignment of the items with the study's objectives. Their comments were incorporated to refine the wording, improve structure, and remove any ambiguous or overlapping items.

In addition, the internal consistency reliability of the instrument was assessed using Cronbach's alpha, which yielded satisfactory coefficients for all five patterns: Instrumental (0.83), Learning-Oriented (0.81), Ethically-Conscious (0.85), Dependency (0.79), Peer-Influenced (0.82), and the overall (.91).

Students rated their agreement with each item on a five-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. This response format allowed the researchers to capture nuanced differences in students' attitudes, making it possible to explore the sociocultural dynamics behind their engagement with generative AI.

Data Collection Procedures

Given the wide geographical spread of the participating schools across Egypt, Saudi Arabia, and Jordan, the questionnaire was distributed online using Google Forms to facilitate access and ensure consistent administration. School administrations were first contacted and briefed about the study's objectives, and their approval was obtained before sharing the survey link with students. Participation was voluntary, and students were informed about the purpose of the study, the confidentiality of their responses, and their right to withdraw at any time. This online approach allowed the researchers to reach a large and diverse sample efficiently, while also giving students the flexibility to complete the questionnaire in a comfortable setting and at their own pace. Table 2 shows the questionnaire content items.

Table 2: Sociocultural Patterns of Arab High School Students' Use of Generative AI in Accomplishing Academic Assignments

Pattern	Items
Instrumental Pattern	1. I use generative AI tools mainly to achieve high grades. 2. My main goal is to complete assignments quickly rather than deeply understanding them. 3. Generative AI helps me save time and effort on schoolwork. 4. Grades are more important to me than how much I actually learn from assignments. 5. I use AI when I am under pressure to meet deadlines.
Learning-Oriented Pattern	1. I use generative AI to understand complex topics better. 2. I rewrite or edit AI-generated answers in my own words. 3. Generative AI helps me improve my writing or study skills. 4. I ask AI questions to explore new ideas beyond what is in my textbooks.
Ethically-Conscious Pattern	1. I always check that the AI-generated content is not fully copied. 2. I only use AI as an idea source and avoid submitting its answers directly. 3. I worry that using AI might be considered academic cheating. 4. I try to balance using AI with showing my own effort and thinking. 5. It is important for me to cite AI-generated content when used.
Dependency Pattern	1. I rely completely on AI tools to do my school assignments. 2. Without AI tools, I would struggle to finish my assignments. 3. I rarely attempt assignments without first using AI.

Pattern	Items
	4. I find it hard to think of ideas without AI help.
Peer-Influenced Pattern	1. I started using AI because many of my classmates use it. 2. I often exchange AI-generated answers with my friends. 3. I feel left out if I do not use AI like my peers. 4. It is common in my class to collaborate using AI tools. 5. I feel social pressure to use AI in my schoolwork.

Data analysis

After collecting the responses through Google Forms, all data were organized and checked for completeness and accuracy, then analyzed using SPSS statistical software. Because this study adopted a quantitative descriptive–analytical design, the analysis focused on the study's main objective: identifying which of the five sociocultural patterns had the strongest presence among students. To achieve this, the researchers relied on descriptive statistics including frequencies, percentages, means, and standard deviations to examine students' responses across the five patterns: Instrumental, Learning-Oriented, Ethically-Conscious, Dependency, and Peer-Influenced. No inferential statistical tests (such as t-tests or ANOVA) were conducted, as the study did not aim to compare demographic subgroups. Instead, the goal was to map the overall landscape of how students engage with Generative AI, and to understand the cultural and social logic behind their choices. Through this approach, the analysis revealed a set of underlying sociocultural factors that appear to guide students' behavior when using generative AI in accomplishing academic assignments patterns that are presented and interpreted in detail in the results section.

RESULTS AND DISCUSSIONS

Results

This section presents the main findings of the study, which aimed to explore the sociocultural patterns that shape Arab high school students' use of Generative AI in accomplishing their academic assignments. Rather than focusing on individual differences or demographic comparisons, the analysis sought to uncover the broader patterns that emerge across students' behaviors and attitudes. By examining students' responses to the questionnaire, it was possible to trace how they approach the use of generative AI whether as a quick shortcut, a collaborative social trend, or a meaningful tool for learning and growth. These results shed light on the cultural and social forces that quietly guide students' choices, often more than formal school rules or teacher expectations do. In the following tables, the five proposed patterns Instrumental, Learning-Oriented, Ethically-Conscious, Dependency, and Peer-Influenced are presented according to their overall means and standard deviations, showing which patterns were most and least dominant in the students' use of generative AI.

a) Instrumental Pattern

The Instrumental Pattern represents students who tend to use Generative AI mainly as a practical tool to complete assignments efficiently and achieve high grades, with less emphasis on deep understanding or personal growth. As shown in Table 3, students' responses to the items under this pattern indicate a moderate overall tendency to approach generative AI in this utilitarian way. Many students acknowledged that AI helps them save time, especially under deadline pressure, yet fewer strongly agreed that grades matter more than actual learning. This suggests that while the instrumental mindset exists, it is not dominant, and students remain somewhat cautious about relying on AI purely for performance outcomes.

Table 3: Students' Responses to the Instrumental Pattern Items (N = 450)

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I use generative AI tools mainly to achieve high grades.	45 (10.0%)	80 (17.8%)	140 (31.1%)	130 (28.9%)	55 (12.2%)	3.15	1.09
My main goal is to complete assignments quickly rather than deeply understanding them.	60 (13.3%)	100 (22.2%)	135 (30.0%)	115 (25.6%)	40 (8.9%)	2.95	1.07
Generative AI helps me save time and effort on schoolwork.	25 (5.6%)	50 (11.1%)	110 (24.4%)	180 (40.0%)	85 (18.9%)	3.56	1.05
Grades are more important to me than how much I actually learn from assignments.	70 (15.6%)	95 (21.1%)	140 (31.1%)	100 (22.2%)	45 (10.0%)	2.90	1.12

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I use AI when I am under pressure to meet deadlines.	40 (8.9%)	60 (13.3%)	95 (21.1%)	170 (37.8%)	85 (18.9%)	3.45	1.14

*Overall Mean = 3.20 (Moderate Level)

The quantitative results in Table 3 show that students' responses to the Instrumental Pattern items tended to cluster around the middle of the scale, reflecting a generally moderate level of agreement. For example, about 58.9% of students (n = 265) agreed or strongly agreed that generative AI helps them save time and effort on schoolwork (M = 3.56), while only 31.1% (n = 140) expressed strong agreement or agreement that grades are more important than actual learning (M = 2.90). Similarly, 56.7% (n = 255) reported using AI when under deadline pressure (M = 3.45). These figures illustrate that while students acknowledge the practical benefits of AI, their responses are generally balanced and not strongly polarized toward either high or low levels of instrumental use.

b) Learning-Oriented Pattern

The Learning-Oriented Pattern reflects students who use Generative AI as a tool for understanding, exploration, and skill development, rather than simply to finish tasks quickly. This pattern represents a deeper engagement with AI as part of the learning process. As shown in Table 4, students' responses to these items suggest that this approach was relatively uncommon. Fewer students reported using AI to enhance their understanding or to build their writing and study skills, and only a small portion said they use AI to explore ideas beyond their textbooks.

Table 4: Students' Responses to the Learning-Oriented Pattern Items (N = 450)

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I use generative AI to understand complex topics better.	96 (21.1%)	140 (31.1%)	120 (26.7%)	70 (15.6%)	24 (5.6%)	2.54	1.08
I rewrite or edit AI-generated answers in my own words.	109 (24.4%)	130 (28.9%)	115 (25.6%)	70 (15.6%)	26 (5.6%)	2.49	1.07
Generative AI helps me improve my writing or study skills.	85 (18.9%)	145 (32.2%)	120 (26.7%)	76 (16.7%)	24 (5.1%)	2.58	1.05
I ask AI questions to explore new ideas beyond what is in my textbooks.	120 (26.7%)	130 (28.9%)	110 (24.4%)	65 (14.4%)	25 (5.6%)	2.43	1.09

*Overall Mean = 2.51 (Low Level)

The quantitative results in Table 4 indicate that students' agreement with the Learning-Oriented Pattern items was generally low. For instance, only 21.2% (n = 94) agreed or strongly agreed that they use generative AI to understand complex topics (M = 2.54), and just 20.0% (n = 90) expressed agreement that they rewrite AI-generated answers in their own words (M = 2.49). Likewise, less than 20% of students reported using AI to explore new ideas beyond their textbooks (M = 2.43). These figures suggest that relatively few students currently use AI as a tool for deep learning or personal skill development.

c) Ethically-Conscious Pattern

The Ethically-Conscious Pattern represents students who try to use Generative AI responsibly checking for originality, avoiding plagiarism, and balancing AI support with their own effort. This pattern reflects students' ethical awareness and concern for academic integrity while using AI tools.

As shown in Table 5, students showed a moderate overall tendency toward this pattern. While many expressed worry about possible cheating and emphasized the importance of citing AI-generated content, fewer reported consistently reviewing or editing AI outputs before submission.

Table 5: Students' Responses to the Ethically-Conscious Pattern Items (N = 450)

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I always check that the AI-generated content is not fully copied.	45 (10.0%)	75 (16.7%)	130 (28.9%)	145 (32.2%)	55 (12.2%)	3.21	1.09
I only use AI as an idea source and avoid submitting its answers directly.	50 (11.1%)	85 (18.9%)	120 (26.7%)	140 (31.1%)	54 (12.2%)	3.14	1.11
I worry that using AI might be considered academic cheating.	35 (7.8%)	60 (13.3%)	125 (27.8%)	165 (36.7%)	65 (14.4%)	3.36	1.06

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I try to balance using AI with showing my own effort and thinking.	40 (8.9%)	70 (15.6%)	110 (24.4%)	165 (36.7%)	66 (14.4%)	3.32	1.08
It is important for me to cite AI-generated content when used.	60 (13.3%)	80 (17.8%)	105 (23.3%)	145 (32.2%)	60 (13.3%)	3.15	1.12

*Overall Mean = 3.24 (Moderate Level)

The quantitative results in Table 5 show that students' agreement with the Ethically-Conscious Pattern items was moderate overall. For example, about 51.1% (n = 230) agreed or strongly agreed that they worry using AI might be considered cheating (M = 3.36), and 51.1% (n = 230) reported balancing AI use with their own effort (M = 3.32). Similarly, around 44.4% (n = 200) emphasized the importance of citing AI-generated content (M = 3.15). These numbers suggest that ethical awareness is present among many students, though not yet deeply internalized by all.

d) Dependency Pattern

The Dependency Pattern reflects students who have become highly reliant on Generative AI to complete their academic assignments often feeling unable to work without it or rarely attempting tasks independently. This pattern captures the risk of overdependence on AI tools instead of developing one's own thinking and problem-solving skills.

As shown in Table 6, students' responses show a high overall tendency toward this pattern. Many indicated that they struggle to finish assignments without AI or find it difficult to think of ideas on their own, suggesting that AI has become a default starting point for much of their work.

Table 6: Students' Responses to the Dependency Pattern Items (N = 450)

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I rely completely on AI tools to do my school assignments.	25 (5.6%)	50 (11.1%)	100 (22.2%)	170 (37.8%)	105 (23.3%)	3.62	1.09
Without AI tools, I would struggle to finish my assignments.	20 (4.4%)	45 (10.0%)	90 (20.0%)	180 (40.0%)	115 (25.6%)	3.73	1.06
I rarely attempt assignments without first using AI.	30 (6.7%)	55 (12.2%)	95 (21.1%)	165 (36.7%)	105 (23.3%)	3.58	1.12
I find it hard to think of ideas without AI help.	25 (5.6%)	60 (13.3%)	85 (18.9%)	175 (38.9%)	105 (23.3%)	3.61	1.11

*Overall Mean = 3.64 (High Level)

The quantitative results in Table 6 show a high level of agreement with the Dependency Pattern items. For instance, about 65.6% of students (n = 295) agreed or strongly agreed that they would struggle to finish assignments without AI (M = 3.73), and nearly 62.2% (n = 280) said they rely completely on AI to do their schoolwork (M = 3.62). These figures suggest that many students have developed a strong sense of reliance on AI tools when approaching their academic tasks.

e) Peer-Influenced Pattern

The Peer-Influenced Pattern represents students who use Generative AI mainly because it is widely used and encouraged within their social circles. These students tend to follow classmates' practices, exchange AI-generated answers, or feel social pressure to keep up with their peers' use of AI tools.

As shown in Table 7, students' responses to these items reveal a strong presence of peer-driven influence. Many reported that they began using AI because of their classmates, and a substantial portion said it is common to collaborate on schoolwork using AI.

Table 7: Students' Responses to the Peer-Influenced Pattern Items (N = 450)

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I started using AI because many of my classmates use it.	20 (4.4%)	40 (8.9%)	85 (18.9%)	180 (40.0%)	125 (27.8%)	3.78	1.05
I often exchange AI-generated answers with my friends.	25 (5.6%)	35 (7.8%)	90 (20.0%)	170 (37.8%)	130 (28.9%)	3.77	1.07
I feel left out if I do not use AI like my peers.	30 (6.7%)	50 (11.1%)	80 (17.8%)	165 (36.7%)	125 (27.8%)	3.67	1.13
It is common in my class to collaborate using AI tools.	15 (3.3%)	30 (6.7%)	75 (16.7%)	190 (42.2%)	140 (31.1%)	3.91	1.01
I feel social pressure to use AI in my schoolwork.	20 (4.4%)	35 (7.8%)	70 (15.6%)	190 (42.2%)	135 (30.0%)	3.86	1.04

*Overall Mean = 3.80 (High Level)

The quantitative results in Table 7 show that the Peer-Influenced Pattern was the most prevalent among all five patterns. For example, about 73.3% of students (n = 330) agreed or strongly agreed that it is common in their class to collaborate using AI (M = 3.91), and around 72.2% (n = 325) reported feeling social pressure to use AI in their schoolwork (M = 3.86). These figures suggest that peer culture plays a powerful role in shaping students' engagement with AI tools.

DISCUSSIONS

The results revealed clear differences in the prevalence of the five sociocultural patterns that shape how Arab high school students use Generative AI in accomplishing their academic assignments. The Peer-Influenced Pattern emerged as the most dominant, followed closely by the Dependency Pattern, indicating that many students are driven by social norms and peer culture, and often rely heavily on AI tools. In contrast, the Instrumental and Ethically-Conscious Patterns appeared at moderate levels, while the Learning-Oriented Pattern ranked the lowest, suggesting that relatively few students currently use AI as a tool for deep learning or skill development.

The findings of this study offer valuable insights into how Arab high school students are engaging with Generative AI as part of their academic work. Rather than using it in one uniform way, students demonstrated distinct sociocultural patterns of use, shaped by their perceptions of schoolwork, the influence of their peers, and the broader educational culture around them.

The results revealed that peer influence and dependency were the most dominant patterns, while instrumental and ethically-conscious approaches appeared at moderate levels, and learning-oriented use was the least common. This variation highlights that students often view generative AI not primarily as a tool for learning, but as a social and practical means to complete tasks and keep pace with their classmates. These patterns reflect more than individual preferences-they hint at deeper cultural logics and social pressures that shape students' behavior, from the competitive focus on grades to the widespread perception of assignments as routine obligations rather than opportunities for growth.

Dominant Patterns: Dependency and Peer-Influenced Use

The results revealed that the Peer-Influenced Pattern and the Dependency Pattern were the most dominant among the participating students. This suggests that many students are approaching Generative AI not as a personal learning companion, but rather as a socially expected and collectively adopted shortcut something they use because "everyone else is using it," or because it has become the easiest way to get things done.

This reflects a broader cultural orientation toward conformity and collective behavior that is often seen in school environments across the Arab world. In such contexts, social belonging and peer acceptance can strongly shape students' behavior, sometimes more than internal motivation or individual interest. When students see their classmates exchanging AI-generated answers or praising its convenience, they may feel compelled to do the same not out of curiosity or desire to learn, but out of fear of being left behind.

This pattern also shows elements of passive reliance, where AI becomes the default first step for doing schoolwork. Many students reported that they would struggle to complete assignments without it, suggesting that AI is gradually replacing the effortful early stages of thinking and idea generation. Such dependence can undermine students' confidence in their own abilities, and if left unaddressed, may erode their capacity for critical thinking and creativity.

These findings point to an urgent need for an educational intervention to "recalibrate" how students engage with AI tools. Instead of banning or ignoring these tools, schools could guide students toward balanced and

intentional use where AI supports their thinking rather than replacing it. Teachers can model this by showing how to use AI outputs as starting points for deeper analysis, and by rewarding originality, reflection, and self-effort rather than just correct answers.

At the same time, it is clear that students do not yet perceive generative AI as a serious learning resource. The low scores for the Learning-Oriented Pattern suggest that most still see it as a task-finishing machine rather than a knowledge-building tool. This attitude seems to be shaped by wider cultural perceptions in Arab societies, where generative AI has often been met with skepticism or even ridicule. When ChatGPT was first launched, for example, it was initially banned or restricted in several Arab countries amid fears of plagiarism and fabricated content. Such responses may have unintentionally framed AI tools as unreliable or even inappropriate for serious learning.

As a result, many students approach these tools with a surface mindset-seeing them as something to "get the assignment done" rather than to understand the subject. This cultural backdrop appears to play a quiet but powerful role in how students form their habits of use, reinforcing patterns of passive, performance-driven engagement and discouraging more thoughtful and exploratory approaches.

Dependency Pattern

The strong presence of the Dependency Pattern shows that many students have begun to see Generative AI as the default way to complete their assignments, often feeling that they cannot work without it. This dependence is not just a matter of convenience it seems to reflect a gradual erosion of students' confidence in their own ability to generate ideas, write independently, or take risks in their learning.

In many Arab classrooms, where the educational culture has traditionally emphasized correct answers and avoiding mistakes, students may come to view AI as a "safety net" that protects them from failure or criticism. Instead of struggling through the uncertainty of brainstorming, they can turn to AI for immediate and polished answers. While this offers short-term relief, it also means that students are skipping the productive struggle that real learning often requires.

Several international studies support this concern. For example, Kim et al. (2025) noted that students often swing between development and dependence when using AI, while Ahlström (2025) observed that many students use AI in mechanical ways that bypass their own thinking. In the present study, this dependency appears to be less about laziness and more about fear of falling behind-a cultural pressure that rewards output over process.

This pattern suggests that schools may need to create safe spaces where effort, exploration, and partial mistakes are valued, so students can practice thinking for themselves before seeking AI's help. Otherwise, over time, they may lose trust in their own abilities and rely on AI as their primary source of thinking**.**

Peer-Influenced Pattern

The Peer-Influenced Pattern emerged as the most dominant pattern overall, revealing that students' use of generative AI is deeply shaped by social norms and the behaviors of their classmates. Many students reported that they began using AI simply because their peers were using it, and they often exchange AI-generated answers as part of their group routines.

This shows how peer culture can act as a powerful driver, sometimes even more influential than teachers or curriculum. In highly collective school settings-common across many Arab countries-students often define success by how well they fit into the group. When using AI becomes a shared norm, not using it can make a student feel excluded or "behind," regardless of their personal interest or ethical concerns.

This finding aligns with Essien et al. (2024), who found that students' engagement with AI in Nigerian universities was strongly shaped by peer expectations and institutional norms, and with Hou et al. (2025), who warned that AI can erode real learning communities when it becomes a social shortcut.

In this study, peer influence seems to be normalizing a shallow, task-oriented approach to AI, where the goal is to finish quickly like everyone else, rather than to learn deeply. Such collective momentum can be hard to resist especially for adolescents who value belonging.

This suggests that shifting students' culture around AI use may require a group-based rather than purely individual approach. If teachers can create classroom cultures where collaboration means discussing and critiquing AI outputs instead of just sharing them, students may start to see AI as a shared tool for learning rather than just a shared shortcut.

Instrumental Pattern

The Instrumental Pattern appeared at a moderate level, reflecting students who see Generative AI mainly as a tool to finish assignments efficiently and achieve good grades, without necessarily engaging with the content in depth. This pattern is common in performance-oriented educational systems, where students are judged primarily

by their scores rather than their growth. In many Arab school contexts, grades often function as the main currency of academic success, which can push students to treat learning as a race rather than a journey.

Several studies have described this phenomenon. For example, Ganjoo et al. (2024) showed that when assignments are structured mainly around output and assessment, students tend to use AI as a shortcut rather than a tool for thinking. Dolinsky (2025) noted that students in programming courses often use AI to produce correct answers quickly, even when they do not fully understand the logic behind them.

In the present study, the instrumental mindset did not dominate, which may reflect students' mixed feelings about the credibility and accuracy of AI-generated content. They seem willing to use it for efficiency, but still hesitate to fully trust it, which keeps their instrumental use in a moderate zone. This highlights an opportunity: if assignments are redesigned to reward process and reflection-not just results-students may begin shifting from instrumental use toward more meaningful engagement.

Learning-Oriented Pattern

The Learning-Oriented Pattern recorded the lowest levels among all five patterns, showing that relatively few students are currently using generative AI as a genuine learning partner to expand their understanding or develop new skills. This finding is especially striking because it suggests that students are not rejecting AI but they are underusing its educational potential. Instead of exploring new ideas, rewriting content in their own words, or asking deeper questions, most students appear to use AI only to complete what is required.

This echoes what Rosvoldsve (2024) found: that teachers often remain skeptical about AI's role in promoting real learning, which in turn discourages students from using it creatively. Likewise, Baidoo-Anu and Ansah (2023) emphasized that while AI holds promise for supporting higher-order thinking, students need guidance to see it as a learning tool rather than a shortcut.

The lack of learning-oriented use among the participants may reflect a cultural hesitation to see AI as a credible educational source. In many Arab contexts, AI tools were initially received with doubt or even ridicule-as when ChatGPT was first launched and several countries responded by banning or restricting it. Such reactions may have left students with the impression that AI is "not serious" or "not for real learning," which limits their willingness to engage with it in meaningful ways.

Ethically-Conscious Pattern

The Ethically-Conscious Pattern also appeared at a moderate level, indicating that while many students are aware of academic integrity issues, this awareness is not yet fully internalized or consistent in their behavior. Students expressed concern about plagiarism and showed some willingness to cite AI-generated content, yet relatively few reported that they consistently review, edit, or transform AI outputs before submitting their work. This suggests a kind of ethical ambivalence: they recognize the moral issues, but do not always act on them.

Murray and Williams (2023) reported a similar tension: students valued the convenience of AI but felt uneasy about authorship and originality. Likewise, Wood and Moss (2024) found that students' ethical reasoning often lags behind their technical ability to use AI, which can create a gap between knowing and doing.

This moderate ethical engagement may also reflect how ethics is often treated as an external rule rather than an internal value in school environments. If students see ethics mainly as avoiding punishment, they may follow rules only when they believe they are being monitored. To move beyond this, schools could embed discussions about integrity, authorship, and responsible AI use directly into assignments, helping students see ethics as part of the learning process rather than as an obstacle to it.

IMPLICATIONS OF THE STUDY

The findings of this study carry several important implications for educators, school leaders, and policymakers who are seeking to integrate Generative AI meaningfully into learning environments.

First, the dominance of the Peer-Influenced and Dependency Patterns suggests that many students are using AI tools mainly out of social pressure or habit, rather than as intentional learning resources. This highlights the need for school-wide cultural interventions that reshape how students collectively view AI. Instead of treating it as a shortcut everyone must follow, teachers can model how to use AI critically, question its outputs, and build on them creatively. Creating collaborative activities where students discuss and critique AI-generated content together can shift its role from a shared shortcut to a shared learning tool. Second, the low presence of the Learning-Oriented Pattern signals that students are not yet experiencing AI as a real opportunity for intellectual growth. This suggests that assignments themselves need to be redesigned. If tasks emphasize exploration, reflection, and process-not just correct answers-students may be more motivated to use AI for deeper learning. Linking AI use to

inquiry projects, problem-based learning, or creative writing tasks can help students see it as a springboard for thinking, not a replacement for it. Third, the moderate scores for the Ethically-Conscious Pattern show that students need explicit guidance and conversations about responsible AI use. Schools can include short ethics modules, require students to document how they used AI in their work, and reward originality alongside output. This can help students build internal habits of integrity instead of treating ethics as an external rule.

The study shows that technology alone cannot transform learning it must be accompanied by cultural and pedagogical change. Generative AI will only support genuine learning if students are guided to see it not as a crutch or trend, but as a powerful partner in their own intellectual development.

CONCLUSION

This study set out to explore the sociocultural patterns that shape how Arab high school students use Generative AI in accomplishing their academic assignments. Rather than focusing on whether students use these tools "correctly," the study sought to understand how they use them, why they do so in particular ways, and what cultural and social forces influence these behaviors. The results revealed that peer-driven and dependency-based use patterns were the most dominant, reflecting the powerful influence of collective norms, social expectations, and performance pressure in shaping students' engagement with AI. In contrast, learning-oriented use was the least common, while instrumental and ethically-conscious approaches appeared at moderate levels. This pattern suggests that most students do not yet see generative AI as a meaningful partner for deep learning, but rather as a convenient shortcut shaped by their social and cultural environment. These findings highlight a critical insight: technology alone does not transform learning-culture does. If students are to use AI as a tool for growth rather than mere task completion, schools must help them develop new ways of thinking about it-as a companion for inquiry, creativity, and critical thinking, not just as a machine for answers.

By bringing cultural awareness, ethical guidance, and thoughtful assignment design together, educators can begin to shift students' relationship with AI from passive dependence to active engagement, paving the way for a more meaningful and future-ready learning culture in Arab schools.

Limitations of the Study

While this study offers valuable insights into how Arab high school students use Generative AI in completing their academic assignments, it is important to acknowledge several limitations.

First, the study relied on self-reported data collected through a questionnaire, which means the findings reflect students' perceptions and declared behaviors rather than direct observations of their actual practices. Some students may have overestimated or underestimated their use of AI, especially on ethically sensitive items. Second, the study involved students from only three Arab countries Egypt, Saudi Arabia, and Jordan which provides cultural diversity but does not capture the full spectrum of contexts across the Arab world. The results should therefore be interpreted as indicative rather than universally representative. Third, the study adopted a quantitative descriptive design, focusing on identifying and ranking patterns rather than explaining their deeper psychological or social causes. This design allowed for breadth but not depth; future studies could complement these findings with qualitative interviews or classroom observations to gain richer insights.

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