Behavioral Intentions and Challenges of Students in Online Learning and Their Implications to Educational Management

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Abstract

This study aimed to describe the behavioral intentions and challenges of students in online learning and their implications for educational management, using a mixed-methods approach with concurrent triangulation design. Quantitative and qualitative data were collected simultaneously through surveys and interviews from middle school students in Altay, Xinjiang, China. A total of 200 questionnaires were distributed and collected, and interviews with randomly selected respondents were conducted. The data were analyzed using mean, weighted mean, and thematic analysis. Findings revealed that most students find online learning convenient, fast, and effective, enhancing self-learning and collaborative abilities. However, they also noted a lack of interactivity and fun. Challenges identified included a lack of self-discipline, unstable internet connections, and insufficient technical support and teacher guidance. These issues led some students to feel helpless and confused. Despite these challenges, students perceived the usefulness of online learning from academic, economic, health, and social-emotional perspectives. They experienced greater opportunities for independent and collaborative learning. The study proposes measures and strategies for school administrative departments, teachers, learning platforms, students, and parents to enhance online learning experiences and address the identified challenges.

Keywords: *Behavioral Intentions, Educational Management, Middle School Students, Online Learning.*

INTRODUCTION

With the continuous development of information technology, online learning has become a new education mode. Under the influence of the current novel coronavirus, online learning has become the main way for students to learn. Online learning requires students to actively build their own learning framework, rather than simply being taught by teachers, allowing students to simply accept and remember.

During the COVID-19 pandemic, offline educational places were temporarily closed, encouraging learners around the world to accept online learning at home. In China, as of December 2022, the number of students studying online has reached 350 million, accounting for 35% of the total number of internet users. The number of middle school students studying online has reached 70 million, accounting for 7% of the total number of internet users. People have found that online learning is beneficial in many ways. Online learning has the flexibility of time and space, allowing students to learn at any time and place, while also providing richer learning resources. Compared to face-to-face classroom learning, online learners have greater learning autonomy, such as independently determining learning goals, developing learning plans, consciously monitoring and adjusting their learning emotions and progress. Similarly, if students have strong self-learning abilities and plan online learning seriously,

online learning can proceed smoothly and achieve high-quality learning outcomes. Online learning provides student-centered learning, collaborative learning, easy access to global resources, and experiential learning through multimedia demonstrations.

Despite the many opportunities offered by online learning, several technological, pedagogical and social challenges are experienced by students (Huang, 2023; Bower & Kumar, 2015). The technological challenges are mainly related to the unreliability of Internet connections and many students' lack of necessary electronic devices. The pedagogical challenges are principally associated with learners' lack of digital skills, structured

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content versus the abundance of online resources, interactivity and motivation and social and cognitive presence (the ability to construct meaning through sustained communication within a community of inquiry).

The social challenges are mainly related to the lack of human interaction between teachers and students as well as among the latter, the lack of physical spaces at home to receive lessons and support of parents who are frequently working remotely in the same spaces. Personal matters are also considered by many researchers as challenges to online education such as student's experience adaptability struggle, problems on time management, self-motivation and feeling of self-isolation (Quevillon, 2020).

Considerably, West (2022) stated that in the face of numerous difficulties in online learning, many frontline teachers and scholars have conducted researches and reflection and most of them are seeking answers on how to improve the quality of students' learning based on the existing environment; how to respond to the new round of teaching challenges in the current situation of repeated epidemics; what valuable experience on online learning bring to traditional teaching; and if traditional classrooms can be combined with online learning.

The extension of these issues has also brought new developments to online learning, and knowing the students' behavioral intentions is widely recognized as an important indicator for evaluating the quality of online learning. This refers to the perceived acceptance and usefulness of online learning among students and a judgment of students' learning effectiveness and learning experience after online learning, which is the relationship between

expectations and outcomes (Li, 2023). This indicates the behavioral intentions and satisfaction level of students with online learning, and the higher the satisfaction level of learners.

In China, the education development status and online learning behavior characteristics in the Altay Region where the study was conducted are representative to a certain extent.

Altay, Xinjiang is a geographically marginalized region in China, with rich cultural diversity. This is an area inhabited by many ethnic groups, such as Uyghurs, Kazakhs, and Mongols. To study the behavioral intentions and challenges of online learning among middle school students, it is necessary to consider the impact of factors such as different regions, ethnic backgrounds, and languages on learning behavior. Conducting research in Altay, Xinjiang can provide more comprehensive and multi-dimensional data, making the research results more universal and representative. Likewise, the Altay Region in Xinjiang has unique geographical and environmental conditions, such as being located in highlands and mountainous areas, with vast and unique natural landscapes. These special conditions may bring specific challenges to students' online learning, such as network coverage and bandwidth limitations, and insufficient technical equipment.

By studying the behavioral intentions, challenges, and implications for educational management of students in the Altay Region of Xinjiang, people can gain a deeper understanding of the essence of these unique challenges and provide effective suggestions for improving educational management and online learning environment.

Nowadays, the Chinese government is actively promoting the development of online learning, especially in areas facing special geographical and environmental conditions, such as Altay, Xinjiang. Understanding students' behavioral intentions and challenges in online learning is of great significance for the government to formulate educational policies and promote the development of online learning.

By studying the Altay region of Xinjiang, targeted policy recommendations can be drawn to provide practical and feasible measures for the government to promote online

learning. Moreover, China is one of the most populous countries in the world, with a large student population. According to the China Education Statistical Yearbook, as of the end of 2020, the number of students in compulsory education in China studying online reached 350 million, with urban students accounting for 62.8% and rural students accounting for 37.2%. By studying the online learning behavior and intentions of Chinese students, one can gain a more comprehensive understanding of the characteristics and needs of the entire Chinese student population, providing a strong basis for educational management and policy formulation.

Currently, although research on the intention of online learning behavior among middle school students has achieved certain results, there are still some research gaps. The existing research mainly focuses on the learning effectiveness, learning motivation, learning environment, and other aspects of online learning, while the

research on the influencing factors of online learning behavior intention among middle school students is not yet in-depth and comprehensive. Therefore, this study aims to provide theoretical and practical support for improving the effectiveness and popularity of online learning by delving into the influencing factors of online learning behavior intention among middle school students. This study could fill the research gaps in the field of online learning and provide useful ideas and methods for improving the effectiveness and popularity of online learning among middle school students. By delving into the influencing factors of online learning behavior intention among middle school students, this study could provide valuable reference and guidance for educational institutions, teachers, and parents, and contribute to the sustainable development of online education.

METHODOLOGY

Locale of the Study

This study was conducted in Altay City, Xinjiang, China. Altay, Xinjiang was chosen as the research site due to its cultural diversity, online learning challenge, and policy formulation reference.

Altay, Xinjiang is a geographically marginalized region in China, with rich cultural diversity. This is an area inhabited by many ethnic groups, such as Uyghurs, Kazakhs, and Mongols. In order to study the behavioral intentions and challenges of online learning among middle school students, it is necessary to consider the effects of different regions, racial backgrounds, language, and other factors on learning behavior. Conducting research in Altay, Xinjiang can provide more comprehensive and multidimensional data, making the research results more universal and representative.

Likewise, the Altay region in Xinjiang has unique geographical and environmental conditions, such as being located in highlands and mountainous areas, with vast and unique natural landscapes. These special conditions may bring specific challenges to students' online learning, such as network coverage and bandwidth limitations, as well as insufficient technical equipment. By studying the behavioral intentions, challenges, and implications for educational management of students in the Altay region of Xinjiang, we can gain a deeper understanding of these unique characteristics; and

Moreover, the Chinese government is actively promoting the development of online learning, especially in areas facing special geographical and environmental conditions such as Altay, Xinjiang. Understanding students' behavioral intentions and challenges in online learning is of great significance for the government to formulate educational policies and promote the development of online learning. Through research in the Altay region of Xinjiang, targeted policy recommendations can be provided to provide practical and feasible measures for the government to promote online learning.

Research Design

The research design of this study employed mixed methods approach to comprehensively explore the students' behavioral intentions, learning conditions, experiences, and challenges in online learning. The quantitative component utilized a survey questionnaire to quantitatively capture the students' behavioral intentions and assess their learning conditions.

The data obtained through the survey were subjected to rigorous quantitative data analysis, employing statistical methods such as mean and weighted mean to interpret and analyze the structured responses from a larger sample of students. Simultaneously, the qualitative component employed interviews to delve into the subjective experiences, perceptions, and challenges faced by students in online learning.

Thematic analysis was employed to interpret and analyze the qualitative data gathered from interviews, identifying patterns, themes, and meanings within the responses. The integration of both quantitative and qualitative data was facilitated through triangulation, allowing for a robust comparison and contrast of findings to enhance the validity and reliability of the overall results.

This concurrent approach not only ensures efficiency in terms of time and resources but also facilitates cross-validation, where the findings from both components are compared, adding strength and depth to the study's

conclusions. The mixed methods design provides a holistic understanding of the complexities surrounding students' engagement in online learning, offering valuable insights for educational practitioners and policymakers.

This study is anchored on the Technology Acceptance Model (TAM) by Davis (1989) which provides a foundation for understanding students' behavioral intentions in online learning by emphasizing perceived usefulness and ease of use. This theory guided the exploration of the students' attitudes and motivations towards online learning.

Likewise, this study is anchored on Kolb's Experiential Learning Theory since the study delved into the students' online learning experiences, focusing on how the concrete experiences, reflective observations, abstract conceptualizations, and active experimentation shape their perceptions and attitudes.

Moreover, this study is pinned on the Management Functions Theory. Drawing from principles of management functions, the study aligned with the planning, implementation, monitoring and supervision, and evaluation phases. It emphasizes how effective management strategies can address challenges and optimize the perceived usefulness of online learning for students.

These theories provided a structured approach for investigating the interplay between students' online learning dynamics and the strategic functions of educational administrators. They offered a lens through which the study aimed to provide valuable insights and recommendations for optimizing the effectiveness of online learning within the context of educational management.

The conceptual framework of this study is rooted in a comprehensive exploration of the students' online learning experiences, challenges, perceived usefulness, and behavioral intentions, interwoven with the administration's role in planning, implementation, monitoring and supervision, evaluation, and the resultant implications on management functions.

In this study, students' online learning was the focus. The students' behavioral intentions which included the perceived usefulness of online learning to students and their experiences in online learning were determined. The students' challenges in online learning were also determined and described. The students' behavioral intentions and challenges in online learning became the basis for writing implications. The implications of the results to educational management as to planning, implementation, monitoring and supervision and evaluation were determined and identified.

Figure 1. The Research Paradigm.

Data Gathering Procedure

Prior to the gathering of data, ethical approval of the research was acquired from the University Research Ethics Review Board (URERB). Upon receipt of the approval, the researcher asked permission to conduct the study from the University of Altay Region in China where the study was conducted.

The collection of data was done in a hybrid mode – online and face to face. The collection of data using the survey questionnaire was conducted online as the researcher sent the survey to the respondents via Google form, while interview was done face-to-face. Face- to-face interviews were conducted to gain a deeper understanding of the interviewees' perspectives and experiences in online learning. The interview guide was developed based on the data collected from the survey questionnaire. To ensure that the participants could fully express their thoughts and opinions, the interview was conducted using their native language. The interview guide was tested to achieve clear objectives. The interviewees were grouped based on their grade levels, therefore, the sample size of the interviewees (all groups) was determined based on theoretical data saturation. The selection of participants continued until no new information was collected. The interview lasted for seven days.

In summary, the collection of data was done for 15 days, which was completed within the most convenient time of the respondents. The collected data were kept confidential and strictly stored in a locked cabinet. After two years, this would be destroyed and shredded, whether it is a hard copy or a soft copy.

Statistical Treatment of Data

The quantitative data from the survey questionnaire were analyzed though statistical methods. The data on the students' perceptions on the level of usefulness of online learning and challenges encountered in online learning were analyzed and interpreted using means.

To interpret the data gathered, the range of mean with its corresponding descriptive interpretation was used as shown below:

Mean Range	Descriptive Interpretation	
4.50-5.00	Strongly Agree	Very Highly Useful
3.50-4.49	Agree	Highly Useful
2.50-3.49	Neutral	Moderately Useful
1.50-2.49	Disagree	Slightly Useful
1.00-1.49	Strongly Disagree	Not Useful

On the other hand, the qualitative data from the questionnaire (short answers) were analyzed through content analysis (Taher, 2007). This was used to analyze and interpret the data on the challenges encountered by the students in online learning. Likewise, these data were analyzed using thematic analysis to generate the themes about the students' challenges in online learning. Moreover, the data on the implications drawn from the results of the study along management functions such as planning, implementation, monitoring and supervision, and evaluation, were generated based on the responses of the students on the level of usefulness of online learning, their experiences in online learning, on the challenges they encountered in online learning.

RESULTS AND DISCUSSIONS

Students' Perceptions on the Usefulness of Online Learning

The first concern of the study is to determine the perceptions of the students on the usefulness of online learning in four perspectives: academic, economic, physical health, and social and emotional. The data are presented in Table 1.

Considerably, the overall mean of 4.58 proved that the usefulness of online learning to students is Very Highly Useful. Among the four perspectives, physical health got the highest mean rating which is 4.73 followed by academic with a rating of 4.65, then social and emotional obtained a rating of 4.63 and the last is economic which is 4.33.

The five top-rated student perceptions which have Very Highly Useful effects on the behavioral intentions of the students in online learning are: "I have time to immerse myself in hobbies, which makes me feel happy" (4.88). "I can participate in online learning anywhere as long as I have an electronic device," "Online learning time is more flexible," and "I can manage my learning time and online learning is effective" obtained a mean rating of 4.85, respectively,

Table 1. Mean ratings of students' perceptions on the usefulness of online learning.		
Criteria	**Mean Rating**	**Descriptive Rating**
A. Academic		
1. Flexibility in learning		
a. I can join online learning anywhere, as long as I have an electronic device.	4.85	(SA/VHU)
b. Online learning time is more flexible, and I can manage my learning time.	4.85	(SA/VHU)
c. I am free to choose the learning method I want.	4.78	(SA/VHU)

2. Improve learning skills			
a. Improve my learning abilities (such as reporting communication, self-summary, basic knowledge)		4.45	(A/HU)
b. Can improve my technical skills (using computers and the internet).		4.73	(SA/VHU)
3. Improvement of learning attitude			
a. Can develop independent learning.		4.50	(A/HU)
b. Can develop self-motivation.		4.82	(SA/VHU)
c. Can learn self-discipline.		3.89	(A/HU)
d. I manage my time better to complete all tasks.		4.78	(SA/VHU)
4. Overall benefits of education			
a. Despite the limitations brought by the epidemic, there is still continuity in learning.		4.49	(A/HU)
b. Online learning materials are becoming more and more accessible.		4.75	(SA/VHU)
c. Online learning is effective.		4.85	(SA/VHU)
Composite Mean		**4.65**	**(SA/VHU)**
B. Economic			
1. Reduce education costs		4.75	(SA/VHU)
2. Increase work-study time		3.91	(A/HU)
Composite Mean		**4.33**	**(A/HU)**
C. Physical health			
1. Disease prevention (preventing exposure to diseases such as COVID-19)		4.90	(SA/VHU)
2. I have more time to take good care of my body (relax, exercise, eat).		4.55	(SA/VHU)
Composite Mean		**4.73**	**(SA/VHU)**
Table 1. (continued)			
D. Social and emotional			
1. I have more time with my family.		4.47	(A/HU)
2. I have the opportunity to help my family at home.		4.38	(A/HU)
3. I have more time to communicate with friends and relatives through social media.		4.78	(SA/VHU)
4. I have time to immerse myself in hobbies, which makes me feel happy.		4.88	(SA/VHU)
	Composite Mean	**4.63**	**(SA/VHU)**
	Overall Mean	**4.58**	**(SA/VHU)**
Legend:			
Mean Range		**Descriptive Interpretation**	
4.50-5.00	Strongly Agree	Very Highly Useful	(SA/VHU)
3.50-4.49	Agree	Highly Useful	(A/HU)
2.50-3.49	Neutral	Moderately Useful	(N/ MU)
1.50-2.49	Disagree	Slightly Useful	(D/SU)
1.00-1.49	Strongly Disagree	Not Useful	(SD/NU)

while "Online learning can develop self-motivation" obtained a mean rating of 4.82. "I am free to choose the learning method I want," and "I have more time to communicate with friends and relatives through social media" got a mean rating of 4.78, respectively.

Despite the many challenges they met during online learning, the middle school students realized that there had been opportunities for them to learn independently and collaboratively with others because of the flexibility in time. They had valuable experiences which are both good and bad, and these taught them to persevere and patiently accomplish their tasks. Moreover, they had time to communicate with friends and families which strengthened their relationships with others. They learned to value communication and collaboration as a way of learning and developing camaraderie as well.

In terms of academic, flexibility in learning is perceived by the students to be Very Highly Useful that affects their behavioral intentions on the usefulness of online learning. In terms of economy, "Online learning reduces education cost" tends to be Very Highly Useful as this obtained a mean rating of 4.75, while "Online learning increases the work-study time" got a rating of 3.91 (Highly Useful). Compared to traditional face-to-face learning, online learning can save a lot of transportation and time costs. Students can work part-time or start businesses at home while completing online courses.

When it comes to health, it can be noted from the table that students perceived "Online learning as a disease prevention (prevention of exposure to COVID-19 and other diseases)" as Very Highly Useful with a mean rating of 4.90. During the pandemic, online learning provides a safer learning environment. Attending an online class decreased the chance of being infected to any disease as there was no face-to-face contact with others. Likewise, "I have more time to take good care of my body (relax, exercise, eat)" got a mean rating of 4.55 (Very Highly Useful). Through online learning, students can better arrange their time and have more time to focus on their physical health, including relaxation, exercise and diet. In terms of social and emotional perspectives, students perceived that online learning gave them more time to take care of themselves and to be with their family. The students realized that online learning gave them the opportunities of taking care of themselves, doing tasks that made them happy, helping their parents in household tasks and spending quality time with family and friends by communicating, chatting, playing and watching together.

These findings can be linked to what Li and Liu (2023) asserted that in online learning, learners can learn anytime and anywhere without being limited to fixed places such as schools, as long as they have the internet and terminal devices such as mobile phones, tablets, and computers, which fully reflects the flexibility of online learning.

Interestingly, there are other perceived usefulness of online learning revealed during the interview with the students as presented below.

Online learning provides students with a channel to acquire knowledge. Students generally believe that through online learning platforms, they can gain a wider range of knowledge, breaking the limitations of geography and school curriculum. They can freely choose their fields and courses of interest, enriching their knowledge system. According to the students, their motivation to participate in online learning is mainly to improve their knowledge level and prepare for future development. In addition, some students revealed that they are interested in music and sports and hope to explore their knowledge in these fields through online learning. Others revealed that the main motivation for participating in online learning is to improve their academic performance and prepare for the college entrance examination.

Moreover, they hope to further broaden their knowledge and perspective through online learning.

Online learning can improve learning efficiency. Students generally believe that online learning, with its efficient and convenient characteristics, helps them achieve higher learning efficiency by using methods such as video, audio, and interactive multimedia when acquiring knowledge points. The students stated that they are satisfied with the online learning platform they are currently using, which provides many practical features such as video tutorials, discussion boards, and quizzes, all of which help students better understand the course content.

Online learning can help students learn independently. The students generally believe that online learning effectively enhances their autonomous learning abilities. Through online learning platforms, they can arrange independently their learning plans, master their learning progress, and cultivate gradually the habit and ability of self-directed learning. Most of the students expressed that the motivation to participate in online learning is mainly to supplement the lack of classroom knowledge while also bringing convenience. Online learning breaks

through the limitations of time and place, allowing students to engage in additional learning at any time and place, making this flexibility highly attractive to students.

On the other hand, when the students were asked if they were satisfied with their current online learning experiences, most of them admitted that they felt satisfied. This is because online learning can provide more learning opportunities and resources, while allowing students to arrange their learning time and location more flexibly. The students reported that they are satisfied with the online learning platform they are currently using. The platform has many practical functions, such as video tutorials, discussion boards, and quizzes, all of which help them better understand the course content. Overall, online learning provides them with more learning opportunities and resources, and is more convenient and efficient. However, some of the middle school students expressed dissatisfaction with online learning. The students acknowledge that some may encounter difficulties due to potential challenges and issues, such as lack of face-to-face communication and feedback, and unsatisfactory learning

outcomes. According to some students, network delays and lag may affect learning progress, and they hope to establish more interaction and feedback mechanisms. Due to the inability to communicate and discuss with other students like in the classroom, this may have a certain impact on some students' learning.

Moreover, the students presented some factors that influence their online learning behavior intention. The following are the influencing factors:

From the perspective of learning effectiveness. Students pointed out the importance of learning plans and self-discipline. Due to the potential challenges they may encounter, they believe that a clear learning plan helps them better manage their time and maintain motivation for online learning. Some students may encounter difficulties due to issues such as a lack of face-to-face communication and feedback, and unsatisfactory learning outcomes. Considerably, self-discipline can help them maintain their focus and continuity in learning without the supervision of teachers or parents. According to some students, network delays and lag may affect learning progress, and they hope to establish more interaction and feedback mechanisms.

Network and device perspectives. The students also emphasized the impact of the network environment and device quality on the online learning experience. Due to the inability to communicate and discuss with other students, like in the classroom, this may have a certain impact on some students' learning. Some students argue that the stability and speed of network connections are crucial to ensure smooth access to online courses and resources. In addition, the students also mentioned the quality and performance of the device, such as the processor speed, memory size, and screen resolution of the computer or tablet, which can affect the effectiveness of their online learning.

The practicality and richness of course resources. Students believe that the practicality and richness of course resources are crucial for stimulating their interest and enthusiasm in learning. They tend to prefer courses that combine with real-life situations and have practical application value. At the same time, students also hope that course resources can be diversified, including videos, audio, interactive tutorials, and online experiments, to help them understand and master knowledge from different perspectives.

From the perspective of teacher interaction and professionalism. Many of the students have emphasized the importance of teacher interaction and professionalism for online learning. They hope that teachers can respond to students' questions in a timely manner and provide effective guidance and suggestions. In addition, students expressed that the professional knowledge and teaching experience of teachers can enable them to have a deeper understanding of the learning content and better apply it to practical life.

The impact of learning environment and learning atmosphere. The students believe that the online learning environment and learning atmosphere are equally important. They suggest interacting with classmates and teachers through online communication platforms to create a positive learning atmosphere. At the same time, they mentioned the comfort and convenience of the learning environment, such as a quiet personal space, easy-to-use online tools, and flexible learning time, which can improve their learning efficiency and quality.

From the perspective of learning costs. Some of the students believe that the cost of online learning is lower than that of traditional face-to-face teaching. They believe that online learning can save transportation, meals,

and accommodation costs, while also utilizing the rich learning resources on the internet to improve learning efficiency.

From a social perspective. The students stated that online learning not only helps them communicate with classmates from around the world, but also cultivates their cross- cultural awareness. This learning method provides students with the opportunity to meet people from various backgrounds, thereby, broadening their horizons and improving their social interaction skills. In addition, online learning places more emphasis on cultivating family relationships and hobbies. Due to the flexibility of learning time and location, students can learn in a family environment and have more time to spend with their families. This helps to strengthen emotional bonds between family members and promote family harmony. At the same time, students can choose courses based on their interests and hobbies, which can help stimulate their learning enthusiasm and improve learning outcomes.

Students' Experiences in Online Learning

The next concern of the study is to determine the students' online learning experiences through an interview. The students admitted in the interview that their experiences in online learning are very fulfilling. They revealed that their experiences include watching videos, reading textbooks, and completing homework. They engage in online learning in their home environment, watching videos, reading textbooks, and submitting homework through computers or mobile devices. During this process, they communicate actively and discuss with teachers and learning partners to gain a deeper understanding and mastery of the learning content. Considerably, they described their learning experiences in various ways. To give a clearer view of the students' online learning experiences, their responses are categorized into themes as reflected in Table 2.

Table 2. Students online learning experiences according to themes, categories and codes.		
Themes	**Categories**	**Codes**
Flexibility	Flexibility of Learning	can learn anytime
	Flexibility in doing learning tasks	can do tasks at own pace
		can choose the learning style
Open Communication	Virtual Communication with teachers and classmates	can participate in online discussions
		can discuss problems with classmates anytime
		can collaborate with classmates to complete some projects and assignments
		can share work with others and receive feedback immediately
		can ask questions and communicate with teachers and classmates freely
Table 2. (continued)		
	Learning by sharing	can share outputs and written work to others
		can interact, learn and share with others thru discussion boards
		can discuss and share problems with classmates anytime
Accessibility	Easy Access to Learning Resources and Materials	can access resources easily
		can watch videos and listen to audio materials anytime

	Maximum Use of Technology	can use gadgets anytime
Autonomy	Independent Learning	can learn on their own time and pace
		can track and evaluate learning progress easily
		can enrich knowledge by accessing online resources freely
	Creating Personalized Learning Environment	can stay anywhere
		can use anything available
	Opportunity to do Other Things	can access resources easily
		can access social media anytime

Flexibility. The students acknowledged that they have gained many benefits through online learning. They can arrange their study time and location more flexibly, without having to travel between school and home every day.

The students experienced flexibility in online learning, allowing them to engage in learning activities anytime and anywhere, follow their own learning pace and choose their own learning styles. This was also noted by Sadiku, et.al. (2018) in his research findings as students mentioned that online learning offers the convenience of time and space, cost- effectiveness, and flexibility. Students can arrange their study time and location more flexibly, without having to travel between school and home every day and this was also noted by Li and Liu (2023) who said that learners can learn anytime and anywhere without being limited to fixed places such as schools, as long as they have the internet and terminal devices like mobile phones, tablets, and computers, which fully reflects the flexibility of online learning.

Open Communication. The students experienced a lot of communication activities that strengthen open communication. They participated actively in online discussions, providing them the opportunities to exchange and share ideas with their teachers and classmates. They worked collaboratively in completing tasks and assignments, and shared ideas and information more often than in face-to-face classes as they were more comfortable to share through online channels. They were even more aggressive to ask questions and queries about their lessons through online platforms. They learned better through sharing and interacting through discussion boards and were even more comfortable to share problems with their classmates.

Students believe that online learning increases communication and this contributed much to the teaching-learning process as communication still remains the most determining factor in the success of the teaching-learning process (Misra & Maselfi, 2021).

The openness of the communication channels with students that may exceed traditional class learning hours is critical to the achievement of the learning process. Likewise, the students admitted that through online learning, they were able to expand their horizons and gain access to more knowledge and information, as well as improve their collaboration and spirit with their teachers and classmates. Through online discussions and communication with their classmates, they were also able to exercise their language expression skills.

The students admitted that through online learning, they have expanded their horizons and gained access to more knowledge and information, as well as improved their collaboration and spirit with teachers and classmates. Through online discussions and communication with classmates, they can also exercise their language expression skills.

This supports what Wu et al. (2023) posited that learners can use online learning platforms to communicate with partners in different time, space and regions, which is conducive to collaborative learning, and this promotes students' generative knowledge building. Through online group projects and meetings, students can collaborate with their peers more effectively when learning online. Students gain a lot from the message boards and grouping tools that let them reply to peers and offer comments on readings and other tasks.

Additionally, more one-on-one contact between students and teachers might be advantageous for networking and learning. Students can post assignments for review and interact with their teachers directly.

Accessibility. The students experienced easy access to course content and resources anytime, anywhere. They have repeated access to course materials as video presentations allow the students to observe and review the material as needed, whereas traditional lectures only allow them to take notes as well as possible. Students have the option to rewatch a video lecture if they feel like they did not fully understand part of the material. This has been noted by Wei (2022) who believes that learners can view replays, record courses, and independently choose to replay the teacher's class videos multiple times for knowledge that they did not fully grasp during their online live course learning process, thereby, truly mastering the knowledge of this lesson.

Likewise, the students mentioned that they maximized the use of technology, giving them the chance to use different gadgets that made them access a variety of materials online which helped them to complete their tasks and assignments. According to them, learning through online resources has broadened their knowledge and perspectives and provided them with more opportunities and possibilities. They have improved their knowledge level and also explored areas of interest. This is the reason why they expressed a strong preference for online learning as they can access the necessary learning resources and materials anytime and anywhere. Additionally, learning provides a way for individuals who are unable to give up their existing way of life to attend college in the traditional sense.

The students expressed a strong preference for online learning. They can access the necessary learning resources and materials anytime and anywhere and communicate with teachers through online videos. In addition, they can participate in online discussion groups to discuss problems with their classmates. Another advantage of online learning is that students can independently arrange their learning progress and pace, and track and evaluate their learning progress. Likewise, students can expand their knowledge by searching for relevant materials online and collaborate with other classmates to complete projects or assignments.

Moreover, the middle school students enumerated the benefits that they have gained from online learning. Below is a summary of the benefits that students have gained from online learning.

Autonomy. The students experienced autonomy in learning and evaluating their own learning progress and needs. They had self-directed learning, enhanced their self-learning and self-discipline abilities, and learned how to manage time and energy. The ability of students to encourage themselves to study independently has been empirically proven successful in the learning process (Misra & Maselfi, 2021).

There is no direct command and supervision from the teacher, the hours of study vary between teachers, and perhaps in various situations, the load of assignments varies from time to time, indeed requires students to be able to direct themselves to study and seek learning sources. Also, students experienced autonomy in choosing their learning environment.

Working from students' own choice of environment, with self-paced learning, the result can be a more personalized learning experience. Students can choose the time that works best for them to complete readings and assignments. Additionally, students experienced autonomy doing other things as they had more free time. They spent more time doing the things they wanted to do because academics do not determine their calendar.

Challenges Encountered by the Students in Online Learning

Table 3 provides a detailed analysis of the challenges faced by the students in online learning such as network and device issues, environmental, learning, and personal issues.

It could be gleaned from the table that among the four issues, personal issues obtained the highest mean rating of 4.74 (Very Highly Useful).

In terms of network and device issues, "When using software, I don't have enough devices (computer or smartphone)" obtained a mean rating of 4.89, "Using an online platform, I don't know how to use it, so I can hardly contact my teachers/classmates" got a mean rating of 4.88, and "Fluctuating signal, unstable signal. Sometimes good, sometimes bad" obtained a mean rating of 4.85. These three challenges are Very Highly Useful to the students in online learning since these can have a negative effect on their learning outcomes as revealed in the findings of the research on the "Impact of Fluctuation Signals on Online Learning."

Table 3. Mean ratings of students' challenges in online learning.		
Criteria	**Mean Rating**	**Descriptive Rating**
A. Network and device issues		
1. Signal missing, we have no signal here.	3.21	(N/ MU)
2. The signal is weak, and our signal here is always very weak.	3.33	(N/ MU)
3. Fluctuating signal, unstable signal. Sometimes good, sometimes bad.	4.85	(SA/VHU)
4. Small tool issues		
a. My small tool is not suitable for online learning or the required activities.	3.78	(A/HU)
b. My small tool may malfunction.	4.12	(A/HU)
5. Insufficient network		
a. Due to financial issues, there was not much traffic.	0.98	(SD/NU)
b. Due to the region not supporting network installation.	1.45	(A/HU)
6. When there is a power outage, I am unable to connect to the internet.	2.60	(N/ MU)
7. When using software, I don't have enough devices (computer or smartphone).	4.89	(SA/VHU)
8. Using an online platform, I don't know how to use it, so I can hardly contact my teachers / classmates.	4.88	(SA/VHU)
Composite Mean	**3.41**	**(N/ MU)**
B. Environmental issues		
1. There is no suitable study in the house. I live in our house, but there is no suitable space for studying there.	3.75	(A/HU)
2. There is noise caused by humans/animals/ machines, and I am disturbed by the noise emitted by humans/animals/machines.	3.65	(A/HU)
3. Uncomfortable temperature, the temperature in the house is too hot or too cold.	3.55	(A/HU)
4. The study desk or desk is not suitable, and my study desk and chairs are not suitable.	3.23	(N/ MU)
Composite Mean	**3.55**	**(A/HU)**

Table 3. (continued)

C. Learning Issues		
1. Difficult to understand the course.	4.90	(SA/VHU)
2. The instructions are not clear, and the instructions in our academic tasks are not clear.	4.58	(SA/VHU)
3. Difficulty communicating with the teacher, when I asked some questions about my task, my teacher did not answer.	4.51	(SA/VHU)

4. Lack of motivation from the teacher, my teacher did not follow up or motivate us to complete the task.		4.70	(SA/VHU)
5. There is a lack of a study schedule, and my teacher did not provide a schedule that can guide us in completing our studies.		4.89	(SA/VHU)
6. There are too many demands and activities to do.		4.88	(SA/VHU)
7. The preparation time is limited, and the time given to us to complete the task is too short.		4.55	(SA/VHU)
8. Group work issue, I encountered a problem while working with a team.		4.30	(A/HU)
9. Teachers have insufficient investment, and we are required to do things we do not know because we are not taught how to do them.		4.50	(A/HU)
10. Lack of reference materials and no recommendation letter that can help me complete this task.		3.99	(A/HU)
11. Technical issue, I do not have sufficient skills to use the online application/platform required by the teacher.		4.40	(A/HU)
12. Difficulty in submitting, I encountered a problem while submitting my output.		3.98	(A/HU)
Composite Mean		**4.52**	**(SA/VHU)**
D. Personal issues			
1. Adaptability issue, I feel that I cannot adapt well to the online learning mode.		4.87	(SA/VHU)
2. Lack of motivation, I don't have the motivation to learn through online mode.		4.38	(A/HU)
3. I feel that due to online learning, my physical health has deteriorated.		4.78	(SA/VHU)
4. Negative psychological attitude, I think I cannot complete my studies through online learning.		4.77	(SA/VHU)
5. Family issues, not getting along well with my family, affect my online learning focus.		4.88	(SA/VHU)
Composite Mean		**4.74**	**(SA/VHU)**
Overall Mean		**4.05**	**(A/HU)**
Legend:			
Mean Range	**Descriptive Interpretation**		
4.50-5.00	Strongly Agree	Very Highly Useful	(SA/VHU)
3.50-4.49	Agree	Highly Usefu	(A/HU)
2.50-3.49	Neutral	Moderately Useful	(N/ MU)
1.50-2.49	Disagree	Slightly Useful	(D/SU)
1.00-1.49	Strongly Disagree	Not Useful	(SD/NU)

It was also stated in the research that with the popularization of online learning, more and more students may study in areas with poor signals, making this problem increasingly serious. Some students may have limited learning outcomes due to a lack of necessary tools suitable for online learning, such as high-speed network

connections and stable video conferencing software, or insufficient network coverage in their respective regions.

Online learning relies on computers, smartphones, or other devices, and for some students, they may not have enough devices to meet their online learning needs, thereby, limiting their learning effectiveness. Therefore, network and device issues are challenges that students face.

When it comes to environmental issues, "There is no suitable study in the house. I live in our house, but there is no suitable space for studying there" obtained a mean rating of 3.75. "There is noise caused by humans/animals/machines," and "I am disturbed by the noise emitted by humans/animals/machines" both got a mean rating of 3.65, respectively. "Uncomfortable temperature, the temperature in the house is too hot or too cold" obtained a mean rating of 3.55. All these challenges are Highly Useful to the students' online learning.

As to learning issues, "Difficult to understand the course" and "There is a lack of a study schedule, and my teacher did not provide a schedule that can guide us in completing our studies" got the highest mean ratings of 4.90 and 4.89, respectively. These are Very Highly Useful challenges on students' online learning.

With regard to personal issues, "Family issues, not getting along well with my family, affect my online learning focus" obtained a mean rating of 4.88, while "Adaptability issue, I feel that I cannot adapt well to the online learning mode" got a mean rating of 4.87. Therefore, the data show that personal issues are Very Highly Useful challenges faced by students during online learning.

Remarkably, the data show that the students have encountered challenges in four main directions during online learning: network and device issues, environmental issues, learning issues, and personal issues.

In relation to the findings, Bower and Kumar (2015) presented a lot of challenges despite the many opportunities offered by online learning. These include adaptability struggle, technical issue, computer literacy, and time manangement.

Aside from the challenges mentioned above, there are other challenges the students experienced in their online learning based on their responses in the interview.

There is lack of face-to-face communication and feedback. The students acknowledged that insufficient communication and interaction with classmates and teachers is a challenge, which can affect the experience and learning effectiveness of online learning. They also stated that there is lack of real-time evaluation and feedback from teachers in online learning, and they need to pay more attention to self-evaluation and reflection to better understand their learning progress and shortcomings, and adjust their learning strategies and methods in a timely manner. When encountering problems, online learning may require more time and energy to seek help. The students acknowledged the lack of real-time feedback from teachers and the need to seek help from others. They often need to prepare in advance for potential problems that may arise during learning and actively seek help from teachers or classmates.

Students need to manage and arrange their own learning progress. In online learning, the students acknowledged encountering some challenges, such as maintaining focus and self-discipline. They believe that they need stronger self-discipline and management skills to maintain the efficiency of online learning. Likewise, they are easily distracted by other things, such as social media and mobile phones. More time is also needed to adapt to new online learning platforms and tools.

Online learning is limited to and affected by the network environment and devices. The students have reported that unstable networks not only lead to issues such as poor video playback and lag, but may also affect the effectiveness of online learning. Secondly, one of the problems they face is the insufficient and comprehensive curriculum resources. Although the school has provided a large number of online course resources, the quality and quantity of these resources are not satisfactory, which limit students' learning scope and effectiveness.

In addition, the learning platform may malfunction, making it difficult for students to conduct online learning normally, which is also a major challenge for students.

Students, themselves, also need to be more proactive in participating in interaction and communication in online learning. Due to lack of real-time feedback from teachers in online learning, the students need to participate more actively in discussions and questioning to better master knowledge and skills. They also need to pay more attention to self-reflection and summarization to better improve their learning outcomes.

Despite the challenges met in online learning, most of the middle school students admitted that they really enjoyed online learning. The students acknowledged that online learning allowed them to learn and acquire new knowledge and skills anytime, anywhere. This learning method is very convenient, allowing them to easily acquire knowledge at home without going out. Online learning saved them from unnecessary troubles, such as traffic congestion, bad weather, etc. Secondly, another advantage of online learning is the flexibility of time and location.

One of the students in the interview said:

I can freely arrange my study time and location according to my own needs, such as studying in the evening, studying in the library and so on. This flexibility makes my learning more efficient andplanned. Moreover, online learning can better stimulate my self-learning ability. Because I have the freedom to schedule my learning progress and approach, it makes me more proactive in learning and exploring. This self-learning ability is crucial for future learning and career development.

Student A

On the other hand, some students revealed that they did not enjoy online learning because of some issues and challenges encountered. These students also believe that interaction between teachers and students, as well as immediate feedback are important part of the teaching-learning process. However, considering the convenience and autonomy provided by online learning, the students believe that it can be a useful supplementary tool, but it cannot completely replace the core of face-to-face learning.

Students' Suggestions to Improve Online Learning

Based on the interview results, the following are the suggestions of the students to improve online learning.

Providing clearer and more specific learning objectives and requirements, so that students can better grasp the learning content and progress. There are many ways for students to improve online learning. Firstly, it is necessary to develop a clear learning plan and set a schedule before learning. Secondly, students need to find high-quality learning resources and tools, such as online video tutorials, discussion boards, and quizzes. Some students also believe that the most important thing is to have clear learning goals and plans, as well as appropriate self-assessment methods to check students' learning progress and understanding. Thirdly, it is necessary to actively search for and utilize various high-quality resources on the internet, such as excellent teachers' online lesson videos and various professional learning websites.

Adding face-to-face communication and feedback sessions for online learning, so that students can better understand and master knowledge. The students expressed that through face-to-face communication with teachers or classmates, they can better understand the course content and gain a more intuitive learning experience. In addition, the feedback process can also help the students understand their learning progress and shortcomings timely, and adjust learning strategies to improve learning effectiveness. Therefore, it is necessary to increase face-to-face communication and feedback in online learning.

Providing more diverse learning resources and content to meet the needs and interests of different students. Firstly, schools and educators should provide more training and support to help students better adapt to this new learning method. Both teachers and students need to further explore and adapt to this new teaching method. In addition, they need to have a deeper understanding of the effectiveness and impact of online learning, so that they can better utilize its advantages and solve the problems it brings.

Increase the requirements for technical support and equipment to enable students to better participate in online learning and communication. Secondly, parents and family environments should also provide a favorable learning environment, such as stable internet connectivity and suitable learning space.

Consider the statement of one student.

For the further development of online learning, we need to make more efforts in technology, policies, and education. For example, we may need to develop more advanced and stable learning platforms and technologies; The government also needs to provide more policy support and guarantees.

Student B

Providing some rewards and incentives to encourage students to better participate in online learning and communication. The students stated that these incentive measures can be formal rewards such as certificates, prizes, points, etc., or more abstract incentives such as praise, recognition, and sense of achievement.

Through these rewards and incentive measures, students can feel recognized and encouraged for their efforts, and thus, participate more actively in online learning and communication. This active participation, in turn, helps to improve students' learning outcomes and social skills. Therefore, rewards and incentive measures are important means to encourage and motivate students to better participate in online learning and communication.

Implications of the Results of the Study to Educational Management

The last concern of the study is to generate the implications of the usefulness of, experiences and challenges encountered by the students in online learning to educational management which include planning, implementation, monitoring and supervision, and evaluation.

Planning. The research results indicate that education managers need to consider the personalized needs and influencing factors of students when planning online learning systems. For example, factors such as students' satisfaction with online learning platform and its usefulness may affect their learning behavior intentions.

Through data analysis, it was found that online learners use mobile phones or computers to learn online platform course resources from home, participate in online platform course discussions, complete platform test tasks and assignments, etc. Therefore, online learning is more flexible, which is also an important factor in students' perceived usefulness of online learning. Online learning can reduce the risk of students' infection with COVID-19 and other diseases, and students are satisfied with the ease of use and functions of the online learning platform. Therefore, when planning an online learning platform, education managers should ensure that the platform is easy to use, provides useful learning resources and support services, to improve student satisfaction and learning outcomes.

The effectiveness of online learning for middle school students is influenced by various factors, such as learning environment, learning resources, and individual differences among students. These factors have a significant impact on the planning of education managers. Based on these results, education managers should also develop appropriate policies and strategies based on research findings, such as providing sufficient training and support to students to help them adapt to online learning environments and improve learning outcomes. Education managers can predict and plan more accurately the allocation and provision of online learning resources to better meet the needs of middle school students. At the same time, the research results can also help planners better set learning goals and expected learning outcomes to better evaluate the effectiveness of educational management.

As what Hussain (2021) contended, the arrangement of online learning courses is different from that of offline learning courses. In online learning, students can only listen to classes through screens, and teachers and students cannot have face-to-face communication. Considering these characteristics, schools should focus on the overall situation. In addition to offering full courses and sufficient class hours according to the curriculum plan, the time for each online class should be controlled. Thus, planning should be done carefully to meet effectively the objectives of online learning.

Implementation. During the implementation phase, education managers need to take a series of specific measures to improve student acceptance of online learning. Firstly, by understanding the difficulties and problems faced by students in online learning, education managers can adjust teaching strategies in a timely

manner to improve teaching effectiveness. Education managers can provide students with necessary skills training, such as how to use online learning platforms and how to manage time efficiently. Secondly, education managers need to provide sufficient learning support services, such as setting up Q&A functions on the learning platform and providing teacher guidance. Finally, by gaining a deeper understanding of students' learning habits and needs, education managers can better develop and implement personalized teaching strategies and suggestions for integrating online and offline teaching resources to improve students' learning experience and effectiveness.

In relation to this finding, Nguyen (2019) proposed that conducting online teaching involves both division of labor and collaboration. Schools should guide teachers to establish online lesson preparation teams based on grades and disciplines, carry out online teaching research, and accurately position the teaching and learning methods of online education. Teachers who have solid teaching skills and are proficient in network technology can take turns serving as live streamers of online courses, and lecture videos can be shared by all students. Teachers who are proficient in answering students' questions can engage in online interaction with them to help them solve their problems.

Monitoring and Supervision. Through this study, education managers can use these research results to evaluate and improve online learning platforms and courses. For example, by analyzing students' learning behavior data, education managers can understand their learning needs and characteristics, and then optimize and improve online learning platforms and courses. In addition, educational managers can use these research results as an important basis for evaluating teachers' teaching effectiveness and students' learning effectiveness, helping them to improve teaching quality and learning effectiveness.

Education managers need to strengthen monitoring and supervision of the online learning process. Firstly, education managers need to regularly collect and analyze students' learning data, such as their online learning time, interaction frequency, and test scores. Through these data, education managers can understand students' learning progress and effectiveness, identify problems in a timely manner, and take corresponding measures. In addition, education managers should develop appropriate policies and norms, such as establishing appropriate credit requirements and disciplinary measures, to ensure the quality and effectiveness of students' learning.

Education managers can effectively monitor and supervise the effectiveness of online learning. Specifically, educational managers can use these research findings to design and implement regular evaluation and feedback mechanisms, to gain real-time understanding of students' learning progress and effectiveness. At the same time, these research findings can also help education managers identify and solve potential problems in online learning to improve the overall quality of education.

This finding can be linked to what Wa Alshuridehng et al. (2018) asserted that schools should formulate a student online learning guide according to the actual situation, clearly specifying how and to what extent students should do in online learning, and what responsibilities parents should do. Parents should, according to the school's arrangements, urge students to abide by the school's work and rest schedule, enter daily online learning on time, effectively carry out online interaction, and complete high-quality homework assigned by teachers every day.

Evaluation. The implications of the results of the study to educational management specifically on evaluation are as follow:

Optimizing course design. The research results show that learning behaviors such as setting clear goals and plans, preparing well before class, reviewing, and reflecting after class, and completing assignments on time have a positive impact on the effectiveness of online learning. This suggests that when designing courses, teachers should focus on guiding students to learn effectively, such as setting clear learning goals, providing preview materials, providing opportunities for post class review and reflection, and setting homework reasonably. Improving technical literacy. The research results emphasize the importance of proficient operation of learning platforms and computer skills for online learning. This suggests that when conducting course evaluations, teachers need to consider students' mastery of learning platforms and technologies. To better adapt

to the online learning environment, students need to have a certain level of technical literacy, which also requires teachers to focus on improving students' technical abilities in the curriculum.

Measuring learning effectiveness. The research results indicate that students with simple and easy-to-use learning systems, strong computer skills, and good learning habits (such as setting goals and plans, previewing before class, reviewing and reflecting after class, and completing assignments on time) are more likely to succeed in online learning. This suggests that when conducting course evaluations, teachers need to pay attention to students' online learning outcomes, not just traditional exam scores, which should become important indicators for measuring learning outcomes.

Improving feedback mechanism. The research results on online learning for middle school students also indicate that it is necessary to establish a comprehensive learning feedback mechanism because it can help students understand their learning progress and effectiveness in a timely manner, so that they can make timely adjustments and plans for their learning. Therefore, in course evaluation, attention should also be paid to the evaluation and improvement of feedback mechanisms.

Relatedly, Cheng (2022) emphasized that school teaching management personnel should regularly patrol or listen to classes on the online live streaming platform every day, regulate teachers' online teaching behavior, and urge teachers to continuously improve their teaching. Schools should strengthen the evaluation of the effectiveness of online teaching for teachers. They should regularly distribute teaching evaluation forms to students and parents online, solicit their opinions on online teaching, and provide timely feedback to teachers through the internet to promote continuous improvement in teaching, improve teaching efficiency, and improve online learning.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this study, the following conclusions are drawn:

A very high level of student perception on online learning signifies a positive attitude, strong engagement, and proficiency in utilizing technology for education. This positive perception suggests adaptability, flexibility, and an enhanced learning experience, contributing to increased self-efficacy and academic achievement.

Such as favorable outlook supports educational management in making informed decisions and can positively impact institutional reputation. Aligned with current trends, a high level of perception on online learning positions educational institutions to meet evolving student needs and excel in the dynamic landscape of modern education.

Overall, a highly positive perception among students indicates a constructive alignment with the benefits and opportunities offered by online education, fostering an environment conducive to effective teaching and learning.

Based on the research findings and conclusions, provide recommendations to teachers, students, school administrators, parents and communities, and future researchers.

Teachers are recommended to fully understand students' attitudes and needs towards online learning, including their interests, motivations, and learning styles, in order to develop targeted teaching plans and strategies. They need also provide students with necessary online learning support, including technical training, organization and selection of learning resources, provision of learning guidance, and timely feedback. Through these support measures, students can successfully complete online learning tasks and improve learning outcomes.

Likewise, students are recommended to maintain a positive learning attitude and motivation, and have an interest and enthusiasm for learning. This can help them better engage in learning and improve learning efficiency. They need also participate actively in learning activities may it be online or face-to-face.

Moreover, school administrators are recommended to provide necessary technical equipment and network environment to support students' online learning activities. At the same time, it is necessary to constantly update equipment and technology to meet the learning needs of students. Additionally, they should integrate and optimize online learning resources, including online courses, learning platforms, teaching videos, etc., to ensure

that students can easily access and use these resources, and provide necessary technical support to solve problems that students may encounter during the use process.

Futher, parents and community members are recommended to actively support their children's online learning, encourage them to overcome difficulties, and persist in learning. At the same time, they are encouraged to develop reasonable learning plans, supervise and guide their children's learning.

Lastly, future researchers are recommended to conduct more in-depth research to explore the details and mechanisms of the influencing factors of online learning, providing more detailed guidance for improving students' acceptance of online learning. Future researchers can provide scientific basis and reference for the improvement and policy formulation of online learning through research, promoting the development.

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