

Self-efficacy, motivation, and satisfaction of students in online learning at Chinese university

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Abstract

This study examined self-efficacy, motivation, and satisfaction among students in online learning at Chinese universities. The aim was to understand their experiences and explore the relationships between these factors. The findings can enhance online education quality and support lifelong learning. Data were collected through a formal questionnaire survey of 397 college students, analyzed using SPSS25.0. The study applied theories such as distance learning interaction, constructivist learning, motivation learning, independent learning, and customer satisfaction. Dimensions include educational knowledge, communication/interaction, feedback, social impact, intrinsic and extrinsic motivation, student-instructor interaction, instructor performance, and course evaluation. The results provided valuable insights into Chinese college students' online learning experience. Understanding the relationships between self-efficacy, motivation, and satisfaction emphasizes the need to improve online learning outcomes and overall education quality. Recommendations included optimizing course design, enhancing the learning platform, promoting self-management, and redefining the teacher's role to enhance satisfaction. In conclusion, this study analyzes the self-efficacy, motivation, and satisfaction of students in online learning at Chinese universities. By exploring these factors, it shed light on students' experiences. The findings have implications for enhancing online education quality and supporting lifelong learning.

Keywords: online learning, self-efficacy, motivation, satisfaction

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1. Introduction

In the dynamic landscape of contemporary higher education, the integration of online learning platforms has emerged as a transformative force, offering unprecedented flexibility and accessibility. This research aims to investigate the nuanced relationship between self-efficacy, motivation, and satisfaction among students engaged in online learning at a Chinese university. As the educational paradigm shifts towards digital modes, understanding the intricacies of students' experiences becomes paramount to optimize the effectiveness of online learning environments. The rapid evolution of technology has redefined traditional education, fostering the growth of online learning in Chinese universities. While online education presents a promising avenue for expansive academic access, there exists a critical need to delve into how students perceive and navigate this novel educational landscape. This study addressed the gap in existing research by comprehensively examining the interplay between self-efficacy, motivation, and satisfaction in the context of online learning.

Self-efficacy refers to an individual's belief in their capability to successfully perform a specific task or accomplish a particular goal (Bandura, 1977). In the context of online learning, self-efficacy reflects a student's confidence in their ability to effectively engage with digital learning materials, navigate online platforms, and achieve academic success in a virtual setting. Motivation encompasses the internal and external factors that drive individuals to initiate and sustain goal-directed behaviors. In the realm of online learning, student motivation involves the desire, energy, and commitment to actively participate in digital courses, complete assignments, and achieve academic objectives (Deci et al., 1985). Satisfaction in online learning refers to the overall contentment and fulfillment experienced by students participating in digital education programs offered by Chinese universities. It encompasses various aspects, including the perceived quality of instructional materials, the effectiveness of online communication, and the overall learning experience. Student satisfaction is a multidimensional construct reflecting the positive evaluation of the online learning environment (Sun et al., 2008).

These definitions provide a foundational understanding of the key constructs—self-efficacy, motivation, and satisfaction—in the context of online learning at Chinese universities. The interactions between these factors play a pivotal role in shaping the overall success and experience of students engaged in digital education. While numerous studies have explored aspects of online learning, there is a noticeable gap in understanding the integrated impact of self-efficacy, motivation, and satisfaction on student experiences within Chinese university settings. Existing literature often focuses on individual variables in isolation, leaving a void in our comprehension of the holistic dynamics that shape the online learning journey for students. Online learning, marked by its asynchronous nature and dependence on digital platforms, represents a transformative departure from conventional educational practices. The distinctive socio-cultural context of China underscores the imperative for a nuanced comprehension of how students engage with and respond to online learning environments. Despite the plethora of studies on various facets of online learning, a glaring research gap exists in the comprehensive exploration of the interconnected dynamics of self-efficacy, motivation, and satisfaction among Chinese university students.

One significant research gap is the absence of integrated exploration of variables. Existing studies predominantly focus on individual components such as self-efficacy, motivation, or satisfaction in isolation. The failure to holistically investigate how these variables intersect and collectively influence the online learning experience constitutes a noteworthy gap in the literature (Anderson et al., 2004; Artino, 2007). Another critical gap emerges in the realm of cultural specificity. Despite the surge in global online learning research, there is a dearth of studies tailored to the Chinese cultural context. Cultural nuances significantly shape student

perceptions and behaviors in educational settings, highlighting the need to bridge this gap in understanding (Bates, 2019; Li et al., 2008).

A third research gap pertains to the longitudinal examination of student experiences. Many existing studies provide snapshots of student experiences at specific points in time, lacking a comprehensive longitudinal perspective. The absence of a thorough exploration of how self-efficacy, motivation, and satisfaction evolve over an extended period within the context of online learning is a notable limitation (Artino et al., 2009). Moreover, there is a scarcity of research addressing the translation of findings into actionable educational policies and practices. Understanding how self-efficacy, motivation, and satisfaction impact student success in online learning can inform the development of strategies and policies that optimize the learning environment. This underexplored area holds the potential to shape educational policies that enhance the overall effectiveness of online learning (Means et al., 2009; Swan, 2001).

The findings of this research hold significance for educators, administrators, and policymakers in Chinese universities, providing valuable insights into the nuances of online learning. Understanding the interplay between self-efficacy, motivation, and satisfaction can inform the development of tailored strategies to enhance the effectiveness of online education, ultimately contributing to the academic success and well-being of students. As online learning continues to shape the future of higher education, unraveling the dynamics that influence student experiences becomes instrumental in creating inclusive, engaging, and effective learning environments. This study endeavors to contribute to the evolving discourse on online education, fostering a deeper understanding of its impact on the self-efficacy, motivation, and satisfaction of students in the Chinese university context.

Objectives of the Study - This study aimed to develop a comprehensive understanding of self-efficacy, motivation, and satisfaction among Chinese university students engaged in online learning. Specifically, it sought to describe the profile of the respondents in terms of sex, age, grade level, and major; determine the students' self-efficacy in terms of educational knowledge and experience, communication/interaction, feedback, and social impact; determined the students' online learning motivation in terms of intrinsic motivation, extrinsic motivation, attitude, and self-management; determine the students' online learning satisfaction in terms of student-instructor interaction, instructors performance, and course evaluation, tested the significant difference of the responses when grouped according to profile, test the relationship of the variables, and proposed a student development plan based on the results of the study.

2. Methods

Research Design - This study chose a descriptive approach in the survey. Descriptive research involves an examination whose results accurately depict the attributes or panorama of a specific population or phenomenon. Such investigations typically do not investigate correlations between multiple variables but focus solely on outlining interesting events or phenomena. The role of descriptive research is to summarize data, identify scenarios, provide knowledge, and document the main trends and properties of turbulence phenomena. He believes that descriptive research is to decipher the essence of phenomena, outline universal and symbolic phenomena, and exclude subjective, individual and non-reflective phenomena, so as to truly, fairly and accurately describe the comprehensive characteristics of a certain topic. . Therefore, the current study aims to systematically clarify, consolidate, and explain the self-efficacy, motivation, and satisfaction levels of online learning among Chinese college students. This project intends to obtain quantitative data through questionnaires and then summarize and illustrate the findings using statistical analysis, infographics, weighted averages, and other techniques.

Participants of the Study - The respondents of this study were 397 students from 11 secondary colleges of Min Zu Normal University of Xingyi in western China. The researcher used the Rao soft online sample size calculator to calculate the number of people to be 385 (margin of error, 5%, 95% confidence). A total of 400

questionnaires were distributed to respondents this time, and 397 questionnaires were returned. The respondents came from 11 secondary colleges. Each participant was asked to complete a questionnaire containing a series of questions. The following number of students will undergo a randomly sampled Rao soft test.

Instrument of the Study - This study wanted to determine the impact of self-efficacy, motivation, and satisfaction on online learning among Chinese college students, explore their previous correlations, and accordingly propose some strategies to improve the quality of online learning. The modified questionnaire includes four parts (81 items in total): profile information, an online learning self-efficacy questionnaire, an online learning motivation questionnaire, and an online learning satisfaction questionnaire. The Online Learning Self-Efficacy Questionnaire is derived from the comprehensive work of AlAli, R.; and Saleh, S., entitled "Construction and Development of a Distance Learning Self-Efficacy Scale and Validation of Psychometric Properties". It proposes a carefully designed distance learning self-efficacy scale covering key dimensions such as educational expertise, interaction skills, feedback mechanisms, and social influence. Ethical permission was generously granted by King Faisal University before commencing the study. Once put into practice, it was carefully deployed on exploratory models and actual target populations. Subsequently, rigorous statistical analysis was performed to interpret and interpret the findings. This ultimately led to the creation of this custom questionnaire.

The Online Learning Motivation Questionnaire adopts the Innovation Scale, which is a derivative of the well-received Learning Motivation Strategies Questionnaire. The original research team aimed to tap into several basic motivational constructs that served as the basis for their research instrument. After a parallel understanding of these two scales, we believe it is necessary to carefully review the design specifications of the online learning motivation questionnaire. The resulting questionnaire included the dimensions of intrinsic motivation, extrinsic motivation, and overall attitude. To measure student satisfaction in an online learning context, three items from Arbaugh's seminal study were employed. These items highlight aspects related to student satisfaction, perceived quality, and anticipated participation in future distance courses. Each item was assessed on a five-point Likert scale ranging from strongly disagree (1) to completely agree (5). Teaching Evaluation Scale items from the prestigious Texas Tech University School of Education have proven to be very useful. Determine the mean and standard deviation of the scale to be within acceptable ranges for valid statistical correlation analyses.

The outcomes indicate that the Cronbach Alpha coefficients of the four subscales of online learning self-efficacy are 0.940,0.947,0.944 and 0.906. All exceed 0.7, demonstrating ($\alpha > 0.7$), which signifies that the reliability of the scale is exceptional. The Cronbach Alpha coefficients of the four subscales of online learning motivation are 0.831,0.896,0.927 and 0.916. Reliability results were good, good, excellent, and excellent. The Cronbach Alpha coefficients of the three subscales of online learning satisfaction are 0.966, 0.971, and 0.945 respectively. All reliability results exhibit excellent. It can be seen from the reliability results that during the pilot phase, the test results of Chinese college students' online learning self-efficacy, motivation, and satisfaction were reliable and consistent.

Data Gathering Procedure - Data were collected through an online survey conducted by "Wenjuanxing". Researchers put the questionnaire on a website, which then automatically generated a two-dimensional graphic code. The researchers asked some coordinators and teachers to help distribute graphic codes to students in 11 secondary colleges, which students could scan to participate in the survey. All data and information are collected through questionnaires. After participants complete the questionnaires, the online system immediately retrieves the questionnaires and performs data analysis. Students filled out the questionnaire based on their own experiences and followed the principles of honesty and credibility. Therefore, researchers can acquire data efficiently and intelligently. In addition, the data collection process is also scientific and reliable.

Before obtaining actual data, experts were consulted and pilot tests were conducted to verify the validity of the questionnaire. Reliability testing was conducted before distribution and collection to enumerators, this was to ensure the reliability and accuracy of the questionnaire. The results of the collected data will be coded in an

Excel spreadsheet and the data entered will be carefully checked to ensure the accuracy of the questionnaire. Tabulate, interpret and analyze the data to evaluate the interrelationships among Chinese college students' online learning self-efficacy, motivation, and satisfaction, and propose a learning enhancement plan to improve the quality of Chinese college students' online learning.

Data Analysis - Upon finalization of the data collection phase, each questionnaire was meticulously examined, expunging any inconclusive questionnaires from our dataset. Consequently, a total of 397 questionnaires remained, each having been meticulously coded for the subsequent statistical examination to elucidate the proposed research inquiries. These procedures were implemented through the usage of Statistical Package for the Social Sciences (SPSS). This investigation employed analytical methodologies rooted in quantitative data, leveraging the very tools of calculating frequencies, percentages, weighted averages, and rankings, to evaluate the overall perspectives of Chinese university students toward various queries regarding self-efficacy, motivation, and satisfaction pertinent to their e-learning experience. Furthermore, we utilized the Mann-Whitney U test to uncover any substantial disparities and the Spearman rho test to establish any significant correlations amidst these three domains.

Ethical Considerations - In conducting research on self-efficacy, motivation, and satisfaction of students in online learning at Chinese universities, ethical considerations play a pivotal role in ensuring the integrity and well-being of participants. Obtaining informed consent is paramount, involving a clear explanation of the study's purpose, procedures, and potential risks and benefits, emphasizing participants' voluntary involvement and the right to withdraw without consequences. Anonymity and confidentiality measures are implemented to safeguard participant privacy, utilizing anonymized data securely stored to prevent unauthorized access. Cultural sensitivity is crucial, recognizing and respecting the cultural context of Chinese students to ensure that research instruments and interpretations align with cultural nuances. Special attention is given to protecting vulnerable participants, with measures in place to shield students from potential harm and provide support for emotional distress. The principle of beneficence guides the research to maximize positive contributions to understanding online learning experiences and enhance educational practices. Transparency and honesty are maintained throughout the process, communicating objectives, methodologies, and outcomes transparently, while avoiding coercion and ensuring voluntary participation unrelated to academic consequences. Robust data security measures, researcher integrity, and responsible dissemination of results further contribute to ethical research practices, fostering an environment of respect for participants and a commitment to advancing knowledge with integrity and responsibility.

3. Results and discussion

There were 228 female or 57% and 189 male or 42.6 % . On the other hand, most respondents (63%) fell in the 23-29 age range, with 23% between 30-39. Furthermore, there were 193 or 48.6% freshmen, 93 or 23.4 % sophomores, 87 or 21.9 juniors and 24 or 6% seniors. Lastly, there were 278 or 89.5% Science and Technology majors, 97 or 24.4% Art and Sciences majors and 24 or 8.5 & Economics and Management majors. The sample was skewed female, with 71% identifying as women. This overview provides a meaningful context for interpreting satisfaction ratings and identifying gap areas warranting intensified support over heterogeneous audiences. Maximizing equitable access remains a priority.

Table 1

Summary Table on Level of self-efficacy

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Educational Knowledge and experience	3.18	Moderate	1
2. Communication/interaction	2.96	Moderate	2
3. Feedback	2.78	Moderate	4
4. Social Impact	2.82	Moderate	3
Composite Mean	2.93	Moderate	

Legend: 4.50 – 5.00 = Very High; 3.50 – 4.49 = High; 2.50 – 3.49 = Moderate; 1.50 – 2.49 = Low; 1.00 - 1.49 = Very Low

Table 1 provides a summary of respondents' self-efficacy levels across the dimensions of educational

knowledge and experience, communication/interaction, feedback, and social impact. The overall composite mean of 2.93 suggests respondents rated their general online learning self-efficacy as moderate. Notably, educational knowledge and experience received the highest mean of 3.18. This reinforces findings from previous literature emphasizing that efficacy judgments form based on direct mastery experiences over time (Bandura, 1977). Respondents seemed to draw greater confidence from technical skills versus socioemotional competencies. Within this sample, efficacy related to feedback received the lowest mean at 2.78. As feedback processing requires complex metacognitive regulation, developing these skills presents a particular challenge online (Broadbent et al., 2015).

Qualitative data probing Feedback experiences could offer insight into specific difficulties. Meanwhile, means for communication/interaction and social impact hovered in the moderate range near 3. Targeted supports cultivating these could help elevate efficacy. Notably, self-efficacy levels described through these quantitative ratings represent students' subjective perceptions rather than objective competency measures. Future mixed-methods exploration centering learners' experiences could provide a more well-rounded understanding of enablers and barriers to developing efficacy in each dimension. Overall, this summary offers validity to prior research associating efficacy with online learning success. By pinpointing relative strengths and needs across competency categories, it informs strategic selection of interventions to foster continued efficacy growth through targeted experiences, modeling, and social influences over time.

Table 2
Summary Table on Online learning motivation

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Intrinsic motivation	2.97	Agree	3.5
2. Extrinsic motivation	3.00	Agree	2
3. Attitude	2.97	Agree	3.5
4. Self-management	3.21	Agree	1
Composite Mean	3.04	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Table 2 presents data on respondents' levels of satisfaction with online learning. The composite mean of 3.04 indicates a moderate level of overall satisfaction. Understanding the dynamics of intrinsic motivation, extrinsic motivation, attitude, and self-management among Chinese college students in online learning is crucial for designing effective educational strategies. Intrinsic motivation refers to the internal drive and personal interest in learning. Recent studies have highlighted the positive impact of intrinsic motivation on Chinese college students' engagement and success in online courses. For example, research by Li et al., (2018) indicates that students who find online learning content personally meaningful and interesting are more likely to exhibit higher levels of intrinsic motivation.

Extrinsic motivation involves external factors, such as grades or rewards, driving students' engagement. Chinese college students may be motivated by the desire for academic achievement and recognition. Research by Zhang et al. (2019) explores how extrinsic motivators, such as the pursuit of good grades, influence students' participation and commitment in online higher education. Attitude encompasses students' feelings and beliefs about online learning. Wang et al. (2018) investigate how the attitude of Chinese college students towards online learning impacts their motivation. Positive attitudes, shaped by perceptions of the relevance and effectiveness of online courses, are found to contribute significantly to motivation and engagement.

Self-management involves students taking responsibility for their learning process. Chen et al. (2019) delve into the role of self-regulation in online language learning among Chinese students. The study emphasizes the importance of self-management skills, such as goal setting and time management, in influencing students' motivation and success in online courses. Culture plays a significant role in shaping motivation. Jiang (2016) explores how Confucian values and collectivism influence Chinese learners' attitudes and motivation in online learning. Understanding cultural nuances is crucial for tailoring motivational strategies that resonate with the cultural background of Chinese college students. Intrinsic and extrinsic motivations, attitudes, and

self-management are interconnected factors influencing Chinese college students in online learning. The studies emphasize the need for personalized and culturally sensitive approaches to enhance motivation and success in the online learning environment.

Table 3
Summary Table on Online learning Satisfaction

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Student-Instructor Interaction	2.58	Agree	3
2. instructors Performance	2.65	Agree	2
3. Course Evaluation	2.67	Agree	1
Composite Mean	2.63	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 3 presents the summary table on online learning satisfaction. The composite mean of 2.63 indicates that the respondents agree in general. Interaction with instructors is a crucial factor influencing online learning satisfaction. According to Li et al. (2018), positive student-instructor interactions, including responsive feedback, effective communication, and instructor availability, significantly contribute to higher levels of satisfaction among Chinese college students in online courses. Instructors' performance, encompassing teaching effectiveness and support, is a key determinant of online learning satisfaction. Research by Wang et al. (2018) suggests that Chinese students value instructors who actively engage in the online learning environment, provide quality feedback, and create a supportive atmosphere, ultimately leading to higher levels of satisfaction. Chinese college students' satisfaction in online learning is also linked to their evaluation of the course itself. Zhao et al. (2020) emphasize that effective course design, content organization, and overall course structure significantly impact student satisfaction. When students perceive that the course meets their expectations and provides a positive learning experience, it contributes to higher levels of satisfaction. In summary, recent studies highlight that positive student-instructor interaction, effective instructors' performance, and well-designed course evaluations are crucial components influencing the satisfaction of Chinese college students in online learning. These factors collectively contribute to a positive and enriching online learning experience.

Table 4 shows the association between Level of Self-Efficacy and Online Learning Motivation. The computed r-values indicates a moderate direct correlation and the resulted p-values were less than the alpha level. Results shows that there was significant relationship exists and implies that the higher the level of self-efficacy, the more that they are motivated.

Table 4
Relationship Between Level of Self-Efficacy and Online Learning Motivation

Educational Knowledge and experience	rho-value	p-value	Interpretation
Intrinsic motivation	.294**	0.000	Highly Significant
Extrinsic motivation	0.09	0.072	Not Significant
Attitude	.344**	0.000	Highly Significant
Self-management	.180**	0.000	Highly Significant
Communication/interaction			
Intrinsic motivation	.429**	0.000	Highly Significant
Extrinsic motivation	.186**	0.000	Highly Significant
Attitude	.410**	0.000	Highly Significant
Self-management	.210**	0.000	Highly Significant
Feedback			
Intrinsic motivation	.316**	0.000	Highly Significant
Extrinsic motivation	.106*	0.035	Highly Significant
Attitude	.263**	0.000	Highly Significant
Self-management	.181**	0.000	Highly Significant
Social Impact			
Intrinsic motivation	.361**	0.000	Highly Significant
Extrinsic motivation	.209**	0.000	Highly Significant
Attitude	.413**	0.000	Highly Significant
Self-management	.163**	0.001	Highly Significant

Legend: Significant at p-value < 0.01

The relationship between self-efficacy and motivation is a well-explored area in educational psychology.

Self-efficacy, the belief in one's ability to succeed in specific situations, is consistently linked to motivation. For Chinese college students, perceiving high self-efficacy enhances motivation to engage in learning activities (Zimmerman, 2000).

Higher self-efficacy is associated with a mastery orientation, where students focus on acquiring new skills and improvement rather than external rewards (Schunk et al., 2005). Chinese college students with strong self-efficacy approach learning tasks with a mastery mindset. Self-efficacious individuals set challenging goals and persist in the face of difficulties. Chinese college students with high self-efficacy set ambitious learning goals, contributing to increased overall motivation (Bandura, 1997). High self-efficacy correlates with positive outcome expectations, fostering sustained motivation among Chinese college students in online learning (Pajares, 2002). Self-efficacy is closely linked to intrinsic motivation, where students find joy and satisfaction in the learning process. Chinese college students with high self-efficacy experience intrinsic motivation, fostering genuine interest and engagement in academic pursuits (Deci et al., 1991).

In summary, a higher level of self-efficacy among Chinese college students positively influences motivation, affecting goal-setting, persistence, and the overall approach to learning tasks. This underscores the significance of nurturing self-efficacy beliefs to enhance motivation in the educational context. Table 5 presents the association between Level of Self-Efficacy and Online Learning satisfaction. The computed r-values indicates a moderate direct correlation and the resulted p-values were less than the alpha level. Results shows that there was significant relationship exists and implies that the higher the level of self-efficacy, the more that they are satisfied. The relationship between self-efficacy and satisfaction in online learning can be understood through various psychological and educational frameworks. Individuals with high self-efficacy tend to have positive expectations regarding the outcomes of their efforts. In the context of online learning, students with a strong belief in their ability to succeed are more likely to anticipate positive results from their participation. This positive outlook contributes to overall satisfaction with the learning experience (Bandura, 1997).

Table 5

Relationship Between Level of Self-Efficacy and Online Learning Satisfaction

Educational Knowledge and experience	rho-value	p-value	Interpretation
Student-Instructor Interaction	.261**	0.000	Highly Significant
instructors Performance	.255**	0.000	Highly Significant
Course Evaluation	.274**	0.000	Highly Significant
Communication/interaction			
Student-Instructor Interaction	.357**	0.000	Highly Significant
instructors Performance	.323**	0.000	Highly Significant
Course Evaluation	.389**	0.000	Highly Significant
Feedback			
Student-Instructor Interaction	.327**	0.000	Highly Significant
instructors Performance	.218**	0.000	Highly Significant
Course Evaluation	.261**	0.000	Highly Significant
Social Impact			
Student-Instructor Interaction	.390**	0.000	Highly Significant
instructors Performance	.331**	0.000	Highly Significant
Course Evaluation	.384**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Higher self-efficacy is linked to an increased sense of control and autonomy. In an online learning environment, students with a high level of self-efficacy may perceive themselves as more in control of their learning processes. This sense of autonomy aligns with the principles of self-determination theory, contributing to higher satisfaction with the online learning experience (Deci et al., 2000). Self-efficacious individuals are more likely to develop effective coping mechanisms when faced with challenges. In an online learning context, students with high self-efficacy may approach difficulties as opportunities for learning rather than insurmountable obstacles. This adaptive coping contributes to a more positive and satisfying learning experience (Schwarzer & Jerusalem, 1995). Self-efficacy is closely tied to motivation and persistence. Students with higher self-efficacy are more likely to set challenging goals, exhibit a strong motivation to achieve those goals, and

persist in the face of difficulties. This dedication to the learning process contributes to a sense of accomplishment and, consequently, increased satisfaction (Schunk et al., 2005).

Intrinsic motivation, which is characterized by an internal desire to engage in an activity for its own sake, is positively influenced by self-efficacy beliefs. Students with high self-efficacy are more likely to experience intrinsic motivation in their online learning endeavors, contributing to a sense of satisfaction derived from the inherent enjoyment of the learning process (Deci et al., 1991). In summary, higher levels of self-efficacy contribute to increased satisfaction in online learning by fostering positive outcome expectations, providing a sense of control and autonomy, enhancing coping mechanisms, promoting motivation and persistence, and influencing intrinsic motivation. These factors collectively contribute to a more fulfilling and satisfying online learning experience for students.

Table 6 presents the association between online learning motivation and Online Learning satisfaction. The computed r-values indicates a moderate direct correlation and the resulted p-values were less than the alpha level. Results shows that there was significant relationship exists and implies that the more that they are motivated, the more that they are satisfied. The relationship between motivation and satisfaction in online learning is interconnected and can be explained through several psychological and educational perspectives.

Table 6
Relationship Between Online Learning Motivation and Online Learning Satisfaction

	rho-value	p-value	Interpretation
Intrinsic motivation			
Student-Instructor Interaction	.341**	0.000	Highly Significant
instructors Performance	.291**	0.000	Highly Significant
Course Evaluation	.366**	0.000	Highly Significant
Extrinsic motivation			
Student-Instructor Interaction	.195**	0.000	Highly Significant
instructors Performance	.112*	0.025	Significant
Course Evaluation	.112*	0.026	Significant
Attitude			
Student-Instructor Interaction	.391**	0.000	Highly Significant
instructors Performance	.282**	0.000	Highly Significant
Course Evaluation	.384**	0.000	Highly Significant
Self-management			
Student-Instructor Interaction	.172**	0.001	Highly Significant
instructors Performance	.189**	0.000	Highly Significant
Course Evaluation	.213**	0.000	Highly Significant

Legend: Significant at p -value < 0.01

Motivated students often experience a higher degree of intrinsic motivation. Intrinsic motivation refers to the internal desire to engage in an activity for its inherent enjoyment or satisfaction. In the context of online learning, when students are motivated by personal interest, curiosity, or a genuine desire to learn, they are more likely to find the learning experience satisfying (Deci, et. al., 1985). Motivated students tend to actively engage with the learning materials, activities, and discussions. Active engagement is associated with a more immersive and participatory learning experience. Motivated students often set and strive to achieve specific learning goals. When they experience success and progress toward these goals, it contributes to a sense of accomplishment and satisfaction. Motivated students demonstrate higher levels of persistence and effort in their academic endeavors. Their commitment to overcoming challenges and putting in the necessary effort to succeed contributes to a positive learning experience. Motivation is linked to positive emotional states such as enthusiasm, interest, and enjoyment. When students experience positive emotions during the learning process, it contributes to their overall emotional well-being and satisfaction. Positive emotional experiences are often associated with a more favorable perception of the online learning environment.

In summary, motivation positively influences satisfaction in online learning by fostering intrinsic motivation, promoting positive engagement, facilitating goal attainment and achievement, encouraging persistence and effort, and enhancing emotional well-being. These factors collectively contribute to a more satisfying and fulfilling

online learning experience for motivated students.

Table 7*Proposed Student Development Plan to Improve the Quality of Online Learning for University Students*

Key Result	Objective	Strategies	Persons Involved	Success Indicator
I. Self -Efficacy				
Access to electronic sources for information	To improve electronic accessibility for information	To seek support from the government to improve the universities online system	University Officials	80% of the university's online system has improved due to government support.
Communication interaction - availability of support of distance online learning	To seek the support of distance learning platforms	The university will provide distance learning system for teachers and student, they must ensure the platform offers easy-to-use features for communication, such as video conferencing, instant messaging, group chat, and discussion forums. Make sure these tools are accessible on various devices for wider reach.	University and students	80% of teacher and students' interaction were achieved through distance learning system.
Feedback - Adaptation of learning style to meet expectation and outcomes of learning via distance learning	To use distance learning to meet expectation to teachers	Continuous improvement of learning style and outcomes in accordance with learners ability to meet expectation	Teachers, head teachers, supervisors and students involved	80% of the learning style and learning outcomes were met.
Social Impact - participation in online participating, testing community	To enhance participation in online participatory testing community	The university clearly communicates the personal and societal benefits of participating in testing communities. They will showcase how their feedback informs product development, and improves user experience, and contributes to societal progress.	University officials, teachers, and students	80% of the teachers and students communicated with the community on the benefits of participating of testing community. updated on the proper use of plat form
2. Online teaching motivation				
Intrinsic motivation - choice of assignment	To make right decision on the proper choice of assignment online	The online teachers will design assignments that are challenging yet achievable, allowing students to experience progress and mastery. Offer clear instructions, rubrics, and supportive resources to help them succeed.	Teachers and students	80% of the students were able to achieve the designed assignments of the teachers
Extrinsic - grade point average	To achieve high grades using online learning	The students will create a detailed study schedule that allocates dedicated time for each course and assignment. They will use online calendars, planners, or productivity apps to stay organized under the guidance of the teachers	Teachers, students	80% of the students achieve high grades with the use online calendars and planners.
Attitude towards complex online material by teacher	To increase confidence and understanding the complex material presented by teacher	Teacher will utilize various tools like diagrams, simulations, animations , and videos to represent complex concepts visually. This can enhance understanding and engagement for both teachers and students.	Teachers and students	80% of teachers utilize various tools to represent complex concepts.
Self-management - following instruction of	To provide instruction which will be	Teachers will cater to diverse learning styles by offering instructions in multiple formats	Teachers and students	80% of the students really understood the instruction in

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teachers	clearly understood by students	(text, audio, video) and providing opportunities for different learning activities (individual, group, kinesthetic).		multiple formats of teachers.
3. Learning Satisfaction				
Individualized instruction of teachers	To provide content individualized module on teaching learning online	Teachers will employ online platforms that personalize content and activities based on individual performance and progress. They will offer different learning paths, difficulty levels, and resource options.	Teachers , students	80% of the teachers employed online platform that personalized content and activities
Instruction performance	To propose learning methods and strategies to enhance online teaching learning process	The teachers will move beyond traditional lectures and engage students through interactive activities, discussions, problem-solving, and collaborative projects. This caters to diverse learning styles and keeps students actively involved	Teachers and students	80% of the students got engaged in interactive activities.
Evaluation	To ensure alignment of the teaching learning outcome and assessment tools in the syllabus	Teachers will present outcomes and assessments alongside each other in the syllabus the teachers will explicitly link each learning outcome to the assessment(s) that will measure it. The teachers will also use rubrics and grading criteria to provide clear rubrics or grading criteria for each assessment. These should outline the expectations for each performance level and how points will be distributed.	Teachers	80% of teachers will be able to align the teaching objective with assessment tools.

4. Conclusion and recommendations

Most of the respondents were female, twenty-nine years and below, freshmen and mostly majoring in Science and Technology. The participants agreed on dimensions and items on self-efficacy which indicates that the dimensions of educational knowledge and experience, communication/interaction, feedback, and social impact were found to foster a favorable influence on self-efficacy. The study indicates that motivation plays a crucial role in college students' online learning. Intrinsic motivation, extrinsic motivation, and attitude were found to have a significant impact on motivation, while self-management was identified as an important factor influencing motivation. The research highlighted the importance of satisfaction in college students' online learning. Teacher-student interaction, teacher performance, and course evaluation were identified as significant factors affecting satisfaction. The study confirms the significant role of online learning self-efficacy in predicting students' online learning outcomes. Students with higher self-efficacy tend to have better learning experiences, higher satisfaction levels, and improved academic performance. The study also revealed the significant relationship between motivation and satisfaction in online learning. A student development plan was proposed for the self-efficacy, motivation, and satisfaction of students in online learning.

The Universities may establish partnerships with ed-tech companies to offer workshops and credentials in trending skills like coding, data visualization, and virtual reality application development. Accumulating varied yet meaningful educational experiences early on will cultivate students' self-directed learning abilities and intrinsic motivation over time. To facilitate peer interaction and feedback to foster self-efficacy, the instructors may incorporate more interactive activities into online courses, such as peer review, group projects, and live virtual class discussions. Tools like collaborative documents, discussion boards, and chat functions enable spontaneous engagement between distant learners. Frequent peer feedback also allows students to recognize their strengths, cultivate socio-emotional skills, and boost confidence through community support.

At the administrative level, universities may consider caps on maximum class sizes and providing teaching assistants for large enrollment courses to ensure high-quality interaction. Prompt, constructive feedback from both instructors and peers will reinforce students' self-efficacy beliefs. University administrators need to champion a student-centered culture campus-wide. Instructors play a vital role in cultivating an encouraging tone and responding enthusiastically to student contributions. They should also promptly address technical issues to minimize frustration. Beyond the course level, student services like online mentoring and counseling can address diverse learning and well-being needs. Peer learning communities allow the exchange of helpful resources and foster a sense of belonging especially for remote learners. The curriculum online framers may formulate designed courses featuring interesting learning activities and coherent content that positively impact learner satisfaction, another key self-efficacy correlate. Instructors must stay abreast of current best practices and continually refine their virtual facilitation skills. For example, embedding multimedia like animations, simulations, and interactive case studies into lessons enhances cognitive absorption. Gamified quizzes and collaborative assignments tap into students' natural competitive spirit and teamwork abilities. Flipped classroom, problem, and social constructivist pedagogies promote deeper engagement through problem-solving and knowledge co-creation versus passive information downloading.

Regular formative assessments provide frequent confidence-boosting feedback opportunities. Careful course planning ensures optimal cognitive and emotional fulfillment. While online offerings broaden access, blended solutions optimally balance the digital with in-person components to achieve synergy. The administrators may allow some in-studio sessions to bond over shared experiences, doubts, and celebration of achievements. Well-timed campus visits alleviate isolation and reinvigorate community spirit, especially during major transitional periods. Livestreamed guest lectures and meetups supplement asynchronous content with synchronous collaboration. Multimodal delivery through mobile apps, interactive eBooks, and mixed reality expands flexibility according to distinct learning profiles. Multiple access points accommodate diverse needs and strengthen self-efficacy across environments. Universities must invest in robust technological infrastructure to reliably support hybrid pedagogies. The teachers may make use of peer tutoring and study groups to provide additional spaces to collectively problem-solve, reflect, and elevate one another's abilities. Administering pre- and post-assessments of key SRL components like intrinsic motivation gauges individual progress and flags areas requiring customized intervention. Self-directed learners experience greater ownership over outcomes and sustained confidence. For future researchers, this aspect can be used as a reference on how to improve the quality of online learning for college students.

5. References

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