Influence of Students' Learning Style Preferences on Students Success: Moderating Impact of Information and Communication Technologies Effectiveness

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Abstract

Students' success is a significant learning outcome that resonates with the educational institution's performance as well. The present study examined the impact of different students' learning styles in visual, kinesthetic and auditory categories on students' success of high educational institutions in China. The study also investigates the moderating role of information and communication technologies (ICT) effectiveness among student learning styles such as visual, kinesthetic and auditory category and students' success of high educational institutions in China. The study used the surveys to get the data from selected students. The study also used SPSS-AMOS to check the association between constructs. The outcomes revealed that student learning styles in visual, kinesthetic and auditory categories have a positive association with students' success. The results also exposed that ICT effectiveness significantly moderates the relationship between different students' learning styles such as visual, kinesthetic and auditory and students' success, in high educational institutions in China. The study shall act as a guide to regulators in developing guidelines related to achieving the students' success using effective style of learning and ICT implementation as recommended in this study.

Keywords

Student Learning Styles, Visual Category, Kinesthetic Category, Auditory Category, Students' Success, Information and Communication Technologies Effectiveness.

1. Introduction

The Chinese educational system has evolved much in the past few decades following the country's economic growth, technology, and its policies. This study assumed significance as the country remains committed to education as one of the pillars of development, hence it is requisite to identify what could enhance students' performance. Of these factors, students' learning styles have attracted a lot of interest in the past few years. Schemes of learning are commonly classified into visual, tactile and auditory, each carrying the preferred modality of learning. These tend to affect the ability of a student to understand, take in knowledge and reproduce it, together with applying such knowledge in class, hence playing a major role in future class performance. However, in the present technological world, the role of information and communication technologies (ICT), as the moderating factor in the relationship between constructs, has emerged as an area of concern and research, more so in the Chinese technological environment that is culturally different from the western world. Due to its monumentally large and standardized approach to education, **Lan** (2020) believed that the nature of the educational environment greatly differs in China and can also be a fruitful ground in comparing learning styles and ICT.

Traditionally, the Chinese learning style has been formal, highly structured, concentrating on rote memorization and examination performance, without paying much attention to learners-centered approach. Nevertheless, due to the educational reforms and introduction of ICT in classroom teaching, the scenario has slowly started changing and now there is a great chance of creating personalized learning environment (**Zeng *et al.***, 2023). This is a clear implication that Chinese government has supported the ICT development and education technology platforms in the current society. There is therefore a need to understand the impact of these technological inventions on different learning styles for the improvement of students' success in China.

The concept of learning styles describes students' innate preferences for processing information, which can be categorized into three primary types learning styles: visual, kinesthetic, and auditory. The visual group of learners prefer to get information through images and writings as well as models (**Hatira; Sarac**, 2024); the kinesthetic learners benefit from learning contexts that involve the use of their hands on objects or demonstration of experiments (**Hernandez *et al.***, 2020); while the auditory learning style is best realized when the student listens to lectures, discussions and any form of oral communication (**Pascu**, 2024). In China, the style of leaning, for the most part of post-secondary education, has been largely in the traditional lecture format, where learning and delivery are mostly done through power-point presentations, which have a predominantly auditory approach. Podcasts, recorded lectures, and speech-to-text technologies also belong to the auditory learning style, as the auditory learning style involves learning by listening (**Pascu**, 2024).

Additionally, the use of Information Communication Technology (ICT) brings equity to education, which means that students who have preferred learning mode of either receiving information through a picture, seeing, listening or kinesthetic activity, can now be served individually according to their preferred learning style (**Fawns *et al.***, 2021). ICT refers to knowledge technology, teaching learning resources, and technologies such as computer, tab, learning software, and online learning resources. These technologies, according to **Atman Uslu and Usluel** (2019), have a capability of improving the learning experience due to the availability of a number of instructional methods that are coherent with learning capacities. To learners who prefer more illustrations, ICT facilitates dissemination of teachable information through video, animated figures, graphics, and treatises accessible and again and again.

The moderating role of ICT in the relationship between learning styles and students' performance has attracted a lot of attention in the context of the Chinese educational system. The enhanced use of ICT in Chinese educational system is fully exemplified by subsequent steps of Chinese educational Reform and Development strategies 'Internet Plus' as well as a shift to distance learning occurred during the COVID-19 pandemics (**Lin; Tao**, 2024). These developments have also enabled much greater differentiation of educational experiences which could enhance outputs for learners.

The purpose of this study was to pursue students' learning style preferences of visual, kinetic, and acoustic types, and how these styles would impact their academic achievement in the context of the Chinese education system. The research also seeks to establish the mediating effect of ICT, whether positive or negative, on the learning styles of students. The study aims to analyze these styles and shed light on how educational practices and ICT tools can be enhanced to cater for every learning style and improve student performance. This has necessarily given the increasing complexity of education in China.

Theis study also aimed to fill important research gaps in the existing body of knowledge. First, there is very little research done on learning styles specifically in the ICT effectiveness context in the Chinese education environment. It is also apparent that much of what has been written to date focuses on learning styles or ICT in learning separately and there is limited evidence regarding how the two factors are related with students' academic achievement, especially with regard to Chinese students. Furthermore, this study contributes to the existing lack of knowledge about how the contemporary ICT resources can be adjusted to reflect culturally diverse learners' preferences to support educational performance in the modern worldwide context.

2. Literature Review

Visual learning styles that are learners' preferences have been found to enhance students' performance and accomplishment levels especially where the assumptions are well matched to the learning modality in question. Haptic learners, according to **Hatira and Sarac** (2024), are those students who easily learn when they are exposed to instructional materials which they can comprehend through, images, illustrations, graphs, flowcharts or anything that has a written content. Such learners also grasp concepts presented with ease and orderliness as they benefit from the use of visual teaching aids in the organization of information. Concerning learning styles, students who prefer visuals for learning find it easier to understand materials being taught concerning relationships and as a whole when presented with illustrations, since the whole picture is presented to them (**Sless**, 2019). Application of such note taking approaches as color coded notes, mind maps and using multimedia in teaching facilitates helps visual enhanced learning hence improving performance. This positive effect is most pronounced in such areas as mathematics, science, and geography for which drawing is quite applicable. These areas are preferred by visual learners, as the information is presented in the form of diagrams, graphs, and spatial layouts and, therefore, their brain creates more powerful associative

connections (**Hatira; Sarac**, 2024). In addition, **Sepasgozar *et al.*** (2024) point out that incorporation of the integrated models of teaching, particularly the use of visual learning in classrooms like the virtual whiteboard, educational videos, and the other teaching tools, accentuate the advantages of this learning style. This results in most visual learners being more interested, attentive and therefore want to perform better. This is an indication of effects of integrating methods of delivering instruction with those that suit learning styles (**Sless**, 2019). Therefore, the first hypothesis of the study proposes that,

H1: Learning style in visual category has a positive impact on student success.

The students preferring the kinesthetic style of learning reveal a high level of academics when education settings require an active movement learning style from students (**Rahal; Palfreyman**, 2009). A student who prefers the kinesthetic learning style thrives well in a learning environment that enables him or her to handle materials, move around, manipulate objects and generally apply physical energy in handling lessons. **Quennerstedt** (2019), for example, believes that it is most effective in areas where students are able to experiment with something, manipulate an object or learn a practical skill in some way, and which embraces science, physical education, art, and vocational skills. By participating and doing tasks such as acting out a scene, building a model or performing an experiment, it becomes easier for the kinesthetic learner to absorb the concepts being taught, which makes learning much more effective (**Bertrand; Namukasa**, 2020). These learners stand to gain from curricular deliverance methods that include utilization of motion parts in the learning process which include gestures, role plays or simulations, field trips or demonstrations among others. The fact that students become active participants when learning through the kinesthetic concept enables them to create sturdy neural connections, which will enable them to understand the knowledge gained and put it into practice (**Kwon; Iedema**, 2022).

Additionally, **Bertrand and Namukasa** (2020) believe that kinesthetic learners can exhibit increased levels of creativity, ability to solve problems, and practical knowledge if only they are made to learn through doing. It is therefore for the reason of explaining various issues that kinesthetic learning can be said to be dynamic, one has greater comprehension, better participation, and increased motivation and performance in class. Taking advantage of the kinesthetic learner's need to move and have a feel of things, they can actually score highly in most of their educational pursuits and show the importance of adopting teaching styles that suit the needs of these learners (**Kwon; Iedema**, 2022). Keeping in view this argument, the second hypothesis of the study proposes that,

H2: Learning style in kinesthetic category has positive impact on student success.

According to **Pascu** (2024), auditory learning modes have a favorable influence on accomplishment in a course and students who learn by sound and image enjoyment gain more when the teaching-learning mode utilized corresponds with their learning style. These students perform well when relating to information that is disseminated in oral form in speeches, discussions or through audios. Auditory learner are well-focused and prefer knowledge through listening; thus, they will respond well to oral teaching and narrative as well as instructions given out verbally (**Shreffler *et al.***, 2019). This is particularly beneficial in areas of study that require lots of oral interaction, emphases on language, history, literature, and the social sciences. **Chew and Cerbin** (2021) pointed out that students preferring auditory learning styles learn best via lectures, and retain information well through repetitive prompting of information. They are usually good at comprehending not only words and language, but also the paralinguistic features such as pitch, tone, and rhythm which are very useful for understanding not only the spoken language but also ideas expressed. These learners also perform well in tasks that require them to listen and respond such as discussion, debate and oral presentation, where they can demonstrate their understanding and also come out fully engaged in the process (**Shreffler *et al.***, 2019). One can also note that auditory learning style would also find an echo in settings featuring auditory tools such as podcasts, recorded lectures or music (**Chew; Cerbin**, 2021). Therefore, the third hypothesis of the study proposes that,

H3: Learning style in auditory category has positive impact on student success.

Incorporation of ICT (Information and Communication Technology) causes the impact of visual learning style on success of students to be boosted by effectiveness. Hence, visual learning is normally standardized to entail using images, diagrams and other graphic materials which any specific learning style can favor (**Hatira; Sarac**, 2024). ICT tools improve this by developing a pool of resources in the form of preferences that nail the students' needs in a precise manner. For instance, **Lazou and Tsinakos** (2023) assert that the use of videos, animations, and images, digital text, and infographic enable a varied group of students to engage with content in a way that enriches their reservoir of knowledge and general proficiency skills. The beauty of ICT relies in disseminating large volumes of data in a manner that can be easily understood bearing in mind that some people learn better via visuals (**Pavlou**, 2020). Such students benefit from elements put in place in digital platforms such as color coding, graphic organizers, and/or visual simulations.

Additionally, **Birsa *et al.*** (2022) explain that flexibility of ICT tools including choice of those with graphical presentations and organization of works in form of controls or exhibits favor the visual learning, and the flexibility of recasting visuals in a way that best presents them depending on the need of the learner. This flexibility in turn improves their learning

experience and therefore their academic performance. ICT effectiveness also enhances a greater level of learning by learners who have visual styles since the procedure becomes more engaging and comprehensive (**Pavlou**, 2020). The element of the dynamic concept map and getting feedback from ICT tools help the students comprehend the subject well and keep the learning disadvantage visual learner motivated thus, boosting his/her performance academically. Consequently, the fourth hypothesis of the study proposes,

H4: ICT effectiveness moderates the relation between learning style in visual category and student success.

ICT effectiveness also interacts with kinesthetic learning style in such a manner that the effectiveness of ICT enhances the outcome of students, and consequently students prefer materializing their education through body mobilization (**Yeom *et al.***, 2020). Some of the ICT aspects which are special to kinesthetic learners include involvement of games in the learning process, games that allow a student to get a simulated real life experience, touch screen equipment, among others. **Marín-Díaz** (2020) believes that these tools make kinesthetic learners physically operate some controls, test hypothetical situations, and perform actions within a digital environment. For example, when working on experiments in a virtual lab students can maneuver with such experiments and materials in a way that mimics real life experiences, hence relating real life to some of the concepts taught. Educational games and simulations also provide children contexts for practice that escalate the kinesthetic learner's desire for movement and for touch (**Xu *et al.***, 2022). The above interactive element when well incorporated enhances ICT tools to meet the needs of the kinesthetic learners to ensure the learning process, which are more enjoyable and productive. These coherencies of learning style and technology improve students' understanding and progression still further. Consequently, ICT moderates the effect of kinesthetic learning preferences on college performance. Consequently, the fifth hypothesis of the study proposes,

H5: ICT effectiveness moderates the relation between learning style in kinesthetic category and student success.

ICT effectiveness is influential in the effects of auditory learning and achievement correlated to special apparatus for supporting auditory learning (**Liu *et al.***, 2023). This group of learners prefer information that is presented in the form of an audio, hereby experiencing enhanced ICT resources including the podcasts, recorded lectures as well as the use of other applications that include audio interactivity. These technologies according to **Çakiroğlu *et al.*** (2020), enable the auditory learning styles to view and revise the verbal material as many times as possible enhancing their comprehension and retention of the same. Functions such as speech to text and voice recording also enhance the understanding of the auditory type of learning, as well as the ability to verbalize. Through proper integration and use of ICT, the educational technology supports what auditory learners prefer, which will make the ICT tools increase engagement and consequently increase the comprehension hence come up with improved performance thus improve chances of success for the auditory learners (**El-Sabagh**, 2021). This shows the extent of how ICT was useful in moderating the effects of auditory learners' styles on the outcomes of learning. These arguments lead to the sixth hypothesis of the study,

H6: ICT effectiveness moderates the relation between learning style in auditory category and student success.

3. Research Methodology

The study examines the impact of student learning styles such as visual, kinesthetic and auditory category on the students' success and also investigates the moderating role of ICT effectiveness among student learning styles such as visual, kinesthetic and auditory category and the students' success of the high educational institutions in China. The study used survey methodology to collect data from the sampled students. The variables were measured using questions retrieved from previous studies. For instance, learning style in visual category was measured with six questions retrieved from (**Wahyudin; Wahyuni**, 2022). These measurement and constructs are given in Table 1.

Table 1: Learning Style in Visual Category.

Items	Questions	Sources
LSVC1	I am more comfortable learning through pictures and videos that do not include writing.	(**Wahyudin; Wahyuni**, 2022)
LSVC2	During the reading test I could remember the graph of faces, names of characters, places clearly.	
LSVC3	I can remember information about the picture story.	
LSVC4	I would rather read than be read.	
LSVC5	It is difficult to study in a crowded, noisy atmosphere and lots of distractions.	
LSVC6	I like to scribble on books, draw.	

The learning style in kinesthetic category, the independent variable of the study, was measured with four questions adopted from **Ariastuti and Wahyudin** (2022). These measurement and constructs are given in Table 2.

Table 2: Learning Style in Kinesthetic Category.

Items	Questions	Sources
LSKC1	I prefer to tell stories, and explain something rather than taking notes.	(**Ariastuti; Wahyudin**, 2022)
LSKC2	When I was talking or explaining something, I would move my hand, tap the pen.	
LSKC3	I am very ignorant in class when the learning time starts to get boring.	
LSKC4	Easily restless and frustrated in listening to something while sitting for a long time, so it requires a little rest.	

The learning style in auditory category, the independent variable, was measured with five questions extracted from **Wahyudin and Wahyuni** (2022). These measurement and constructs are given in Table 3.

Table 3: Learning Style in Auditory Category.

Items	Questions	Sources
LSAC1	When reading I make a sound or move my lips.	(**Wahyudin; Wahyuni**, 2022)
LSAC2	I will record the instruction of the study material.	
LSAC3	I am more comfortable learning discussions with friends.	
LSAC4	I have difficulty writing and prefer to speak it verbally.	
LSAC5	When studying or memorizing I often talk to myself	

The ICT effectiveness, moderating variable, was measured with five questions taken from **Hashim** (2007). These measurement and constructs are given in Table 4.

Table 4: ICT Effectiveness.

Items	Questions	Sources
ICTE1	I find using ICT interesting.	(**Hashim**, 2007)
ICTE2	I have the opportunity to try ICT.	
ICTE3	A trial version is available.	
ICTE4	I have tried several times to use ICT.	
ICTE5	I had taught myself to use ICT before I was asked to use it.	

Finally, the students' success, dependent variable of the study, was measured with four questions taken from **Frick *et al.*** (2009). These measurement and constructs are given in Table 5.

Table 5: Students' Success.

Items	Questions	Sources
SS1	Overall, I would rate the quality of this course as outstanding.	(**Frick *et al.***, 2009)
SS2	Overall, I would rate this instructor teaching style as outstanding.	
SS3	Overall, I would recommend this instructor teaching style to others.	
SS4	Overall, I would rate this teaching style of all the faculty members as outstanding.	

The study sample comprised students of higher education institutions in China. The surveys were distributed to the students with the help of mails and also personal visits to institutions. The researchers distributed 503 surveys, and after one month 290 valid responses were received, with 57.65 percent response rate. SPSS-AMOS was used to check the relationships between the constructs. This tool has the ability to deal with primary data and gives best results even when researchers use large data sets (**Hair *et al.***, 2014). The research framework of the study comprised three independent constructs viz., learning style in visual category (LSVC), learning style in kinesthetic category (LSKC) and learning style in auditory category (LSAC), and one moderating variable viz., ICT effectiveness (ICTE); and one dependent variable viz., students' success (SS). Figure 1 shows these constructs in the form of a research framework.

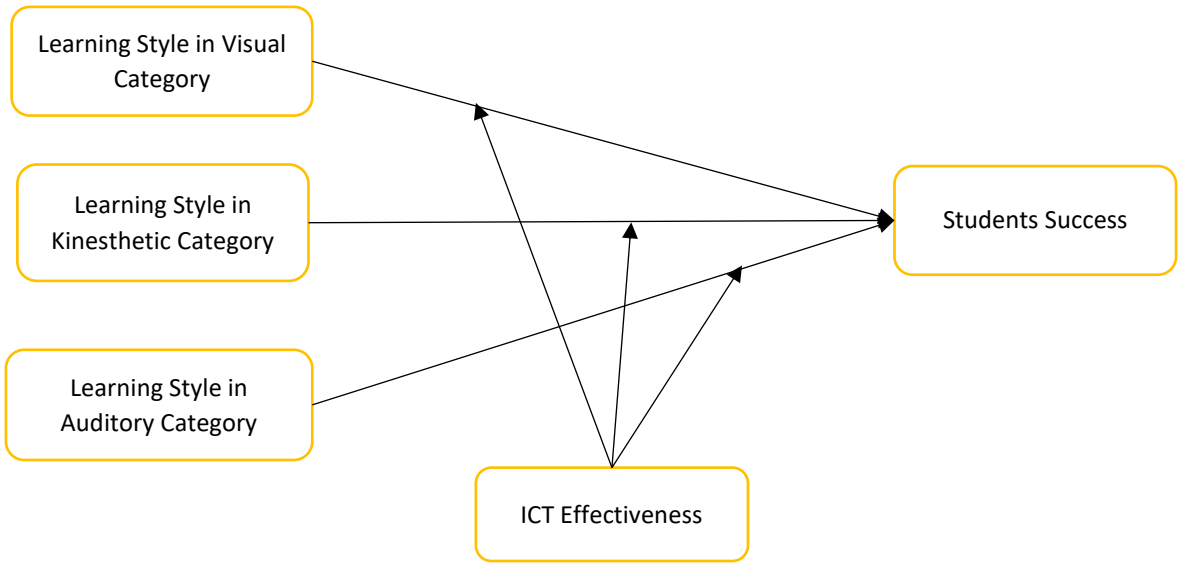

Figure 1: Research Model.

4. Findings and Results

The study examined the convergent validity to expose the correlation between the questionnaire items. The outcomes reveal that factor loading and average variance extracted (AVE) values were bigger than 0.50, composite reliability (CR) values were larger than 0.70 and MSV and ASV values were less than AVE. These values indicated a high correlation among items. Table 6 shows these outcomes.

Table 6: Convergent Validity.

Constructs	Items			Loadings	CR	AVE	MSV	ASV
Learning Style in Auditory Category (LSAC)	LSAC1	<---	LSAC	0.706	0.897	0.695	0.684	0.257
	LSAC2	<---	LSAC	0.985				
	LSAC3	<---	LSAC	0.704				
	LSAC4	<---	LSAC	0.988				
	LSAC5	<---	LSAC	0.746				
Learning Style in Visual Category (LSVC)	LSVC1	<---	LSVC	0.831	0.919	0.699	0.479	0.159
	LSVC2	<---	LSVC	0.842				
	LSVC3	<---	LSVC	0.814				
	LSVC4	<---	LSVC	0.661				
	LSVC5	<---	LSVC	0.788				
	LSVC6	<---	LSVC	0.745				
Learning Style in Kinesthetic Category (LSKC)	LSKC1	<---	LSKC	0.998	0.904	0.613	0.584	0.313
	LSKC2	<---	LSKC	0.631				
	LKSC3	<---	LSKC	0.995				
	LKSC4	<---	LSKC	0.630				
ICT Effectiveness (ICTE)	ICTE1	<---	ICTE	0.802	0.899	0.641	0.479	0.256
	ICTE2	<---	ICTE	0.849				
	ICTE3	<---	ICTE	0.785				
	ICTE4	<---	ICTE	0.793				
	ICTE5	<---	ICTE	0.773				
Students' Success (SS)	SS1	<---	SS	0.561	0.796	0.501	0.257	0.167
	SS2	<---	SS	0.873				
	SS3	<---	SS	0.662				
	SS4	<---	SS	0.699				

Next, the discriminant validity was measured of the correlation between questionnaire items and it was revealed that that Fornell Larcker values showed correlation with each construct itself bigger than the values that exposed the correlation with other constructs. These values indicated a low correlation among variables. Table 7 shows these outcomes.

Table 7: Discriminant Validity.

	LSKC	LSAC	LSVC	ICTE	SS
LSKC	0.834				
LSAC	0.185	0.836			
LSVC	0.827	0.287	0.783		
ICTE	0.359	0.692	0.477	0.801	
SS	0.426	0.202	0.507	0.436	0.708

The study also examined the model good fitness using TLI, CFI and RMSEA. The outcomes exposed that TLI and CFI figures were bigger than 0.90 and RMSEA values were less than 0.05. These values indicated that the model is good fit. Table 8 and Figure 2 demonstrate these outcomes.

Table 8: Model Good Fitness.

Selected Indices	Result	Acceptable level of fit
TLI	0.945	TLI > 0.90
CFI	0.946	CFI > 0.90
RMSEA	0.002	RMSEA < 0.05 good; 0.05 to 0.10 acceptable

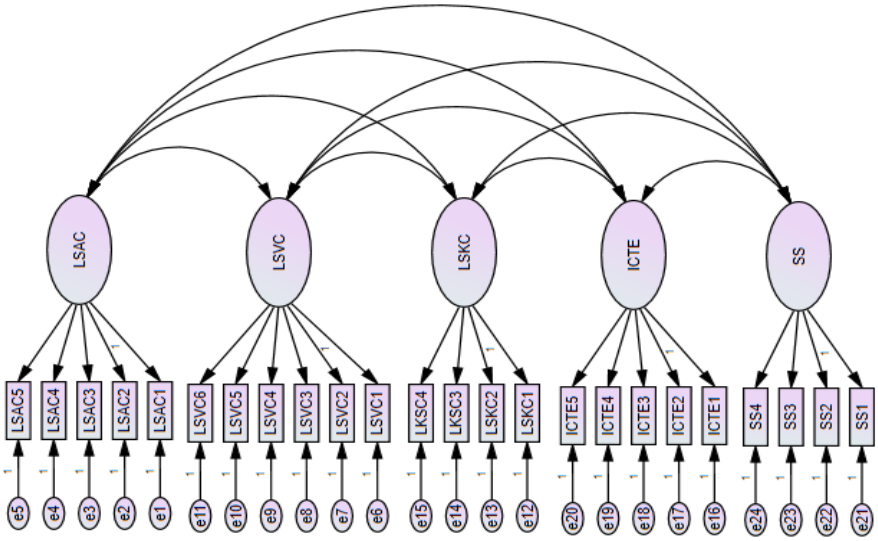

Figure 2: Measurement Assessment Model.

The outcomes also revealed that student learning styles such as visual, kinesthetic and auditory category have a positive association with students' success and thus H1, H2 and H3 were accepted. The results also exposed that the ICT effectiveness significantly moderated relationship among student learning styles such as visual, kinesthetic and auditory category and students' success of the high educational institutions in China and thus H4, H5 and H6 were accepted. Table 9 and Figure 3 exhibit these outcomes.

Table 9: Path Analysis.

Relationships			Beta	S.E.	C.R.	P
Students Success	<---	Learning Style in Auditory Category	0.470	0.037	12.703	0.000
Students Success	<---	Learning Style in Visual Category	0.043	0.021	2.048	0.034
Students Success	<---	Learning Style in Kinesthetic Category	0.041	0.015	2.733	0.011
Students Success	<---	LSAC x ICTE	0.674	0.007	96.286	0.000
Students Success	<---	ICT Effectiveness	-0.270	0.038	7.105	0.000
Students Success	<---	LSVC x ICTE	0.072	0.007	10.286	0.000
Students Success	<---	LSKC x ICTE	0.147	0.007	21.000	0.000

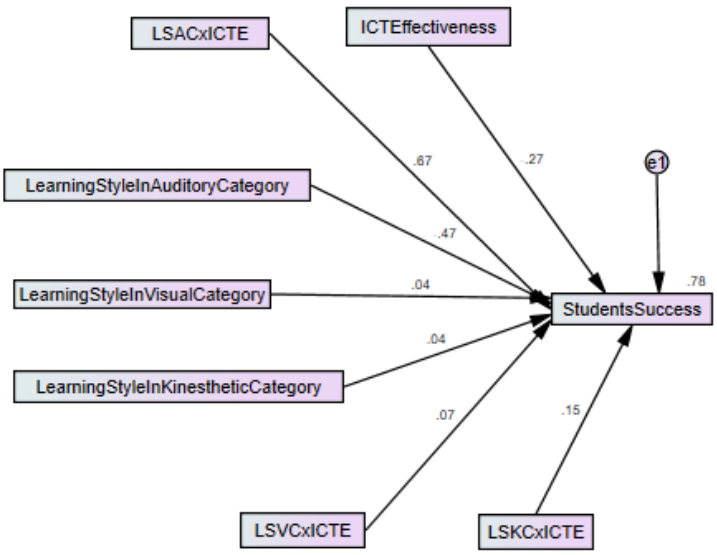

Figure 3: Structural Assessment Model.

5. Discussion

The results of the present study are useful in establishing connections between students' preferences concerning the learning style visualization as visual, kinesthetic, and auditory, and their achievements acknowledging the specifics of Chinese education. Furthermore, the study investigated ICT moderated relationship between learning style preference and academic success of students. This provided a clearer picture of how modern educational technological tools affect students' performance depending on their learning preferences. The study also addressed the educative, politico-legal, and psychosocial considerations that arise from these findings, and the way they may be relevant to the Chinese educational setting. The important results of the study are associated with the influence of the learning style preferences on the performance of students.

These findings are supported by earlier studies like **Husmann and O'Loughlin** (2019) and **El-Sabagh** (2021). These findings also establish that learners who study in styles that are compatible with their learning styles receive better grades. There are learners who prefer to associate what they are learning with what they 'see', something that makes them prefer lesson that are illustrated by diagrams, videos and other graphical displays while others learn better through moving around, touching or doing otherwise, known as kinesthetic learners. For their part, students with the modal specific learning style known as auditory prefer to listen to lectures, discussions or recordings. The findings of **Rajaram** (2020) also support the need to understand and address students' learning styles in schools, especially in a context such as China where didactical models tend, much more, to overlook variations among learners.

However, the introduction and the enhancement of the use of ICT in Chinese education has the propensity of changing this paradigm. In the present research, ICT is used as a moderating variable which shows that ICT can either strengthen or weaken teaching/learning strategies according to learning styles as **Wang *et al.*** (2023) also supports the findings. **Hatira and Sarac** (2024) argue that if a particular child is a visual learner, he or she will benefit from the available educational videos, computer simulations, and online texts among others; hence increased performance. Kinesthetic learners categorically get a lot of value out of ICT through the use of virtual labs, educational games, and or through many other tools and applications that require some form of active participation (**Kwon; Iedema**, 2022). On the other hand, **El-Sabagh** (2021) explores that whereas there are advantages of recorded lectures and podcasts for the auditory learners, they may be disadvantaged if the ICT tools are not well incorporated in an integrated form of Auditory learning environment.

This research finding has special application into China's fast-emerging digitized education environment. The massive investment that Chinese government had put in ICT, coupled with policies like "Internet Plus", had led to increased implementation of digital applications in teaching and learning spaces in China (**Ren *et al.***, 2023). It may be noted that due to the COVID-19 situation, the usage of ICT was even more evident during online classes. However, as highlighted in this study, this is not enough, showing that mere availability of these technologies is not enough. ICT can, therefore, be used in promoting student success depending on the extents that these technologies match the students' learning style preferences (**Fernández-Gutiérrez *et al.***, 2020). Furthermore, educationists and executives involved in devising and facilitating ICT based education frameworks should bear in mind various students' needs.

6. Conclusion

The study concludes that ICT impacts learner characteristics depending not only on their learning style but also on quality and integration of technologies in the environment. **Valtonen *et al.*** (2021) rightly stated that ICT may even pose difficulties to learning for some students especially those who do not fit in the learning styles favored by the learning tools. For instance, kinesthetic learners can easily be disadvantaged by Virtual Learning Environment platforms as there are no manipulatives that would affect their kinesthetic sense or gesture. This underlines the basically correct orientation of the integrated technical changes relating to technology-enhanced learning as to suit every student's learning needs. Since this study focused on the relationship between learning style preferences of students and ICT utility, it was felt that there existed a worrying shortage of individualized and learner-centered strategies. The study also concludes with the evidence that while ICT caters to diverse learning styles of students, it also endorses equality of effective education facilities. Moreover, it was also concluded that technology developers are enjoined to formulate ICTs that will be effective for students with different learning styles in order to harness its potential. In summation, the study calls for student-centered approach in embracing innovations in education, which should foster superior performance among students and equip them adequately to face the challenges of an ever- evolving world.

The study shall act as a useful guide for academicians, education administrators and policymakers to develop such strategies and practices that are compatible with the learning styles preferred by students for ICT implementation. The outcome of this study also has implications for innovators of technology products in China, who can design such products that can cater to the learning styles of students, and provide resources that could facilitate effective and efficient learning. The educators should embrace talking/explaining/describing approaches, combined with showing/ illustrating/ demonstrating, and moving/ handling/ manipulating approaches, as well as listening/ hearing/ receiving approaches, to cater to various learning styles and making learning compatible with ICT applications resulting in student success.

The limitations of the study should also be mentioned, which were always evident during this study despite its several merits and valuable findings. First, this has been argued in this study that contextual validity of research is confined to Chinese context only; hence, it may not easily apply to, or be representative of, other educational systems which may differ in culture, technology and learning practices. Second, the survey data employed in the study was based on students' self-reporting about their learning preferences and ICT efficiency, which may result in such potential biases as social desirability or assessment biases. This research also does not include variables that can be considered as mediating or moderating factors in the relationship between the study constructs. Future studies may discuss constructs like socio-economic status, access to technologies or differences in teaching quality as mediating/ moderating variables. Finally, given that ICT is ever growing, the tools and the platforms discussed in this study may be only yesterday's solutions; hence there is a need for further research to capture the current solutions. These limitations can be better managed when approaching future studies with the aim of providing a deeper insight into the topic.

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