

The Effects of Digital Teaching Resources on Teachers' Motivation in the Blended Education Environment

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Abstract: Blended learning is an innovative educational practice in the development process of intelligent education. Teachers continuously experiment and learn from their experiences in blended learning environments to find a widely implemented teaching model. Two essential factors influencing the promotion of blended learning are digital teaching resources and teacher motivation. However, the purpose, content, and development of digital teaching resources supplied in a blended education environment have changed dramatically. There is an urgent need to rethink the impact of digital teaching resources on teacher motivation. This study explores the positive role of digital teaching resources on teacher motivation in blended learning environments. A survey on the factors influencing blended learning practices involved 365 secondary school teachers. The regression and path analysis results indicate that digital teaching resources are central to enhancing teacher motivation in blended learning environments. There are differences in the effects of practical experience on digital teaching resources and teacher motivation. While digital learning platforms only influence the external motivation of teachers, they do not significantly impact internal motivation. School administrators are responsible for coordinating digital teaching resources and teacher motivation. The study recommends further improving and optimizing digital educational systems to promote blended learning, thereby enhancing the durability and stability of teacher motivation.

Keywords: Blended Learning, Digital Teaching Resources, Teacher Motivation, Secondary School Teachers

1. Introduction

As artificial intelligence develops rapidly, the field of education is gradually joining the wave of digitalization, and the change of technology-supported educational models is being practiced in full swing worldwide. Blended learning as an innovative model will play an essential role in promoting the realization and development of intelligent education in the future [1]. As an emerging teaching tool, digital resources provide teachers with a wide variety of teaching resources and interactive methods, making the traditional teaching model no longer limited to teaching within the classroom. However, despite digital resources' great potential and opportunities, the lack of resources to facilitate online teaching and learning has become a significant issue affecting teachers' motivation in practical applications. First,

the construction of digital resources brings pressure on teachers to learn and adapt [2-4]. For teachers accustomed to traditional teaching methods, digital teaching requires them to learn new technologies and master new tools constantly. It undoubtedly increases the confusion and pressure on career development for teachers with specific teaching experience. As a result, they may need more motivation to actively explore and try digital teaching methods, which affects the construction and use of digital resources. Secondly, constructing digital resources requires teachers to invest much time and energy. Existing teaching and learning resources still need to meet teachers' needs fully [5]. Lack of adequately functioning online communication tools and high-speed broadband or digital devices often disrupt online

learning, affecting teachers' good experience using digital resources [6, 7]. In the case of insufficient digital resources, teachers must invest more time preparing and optimizing digital resources in addition to their busy teaching duties. The production, organization, and updating of digital resources is a time-consuming and labor-intensive process. However, due to the lack of appropriate incentives and recognition mechanisms, some teachers may feel overwhelmed and lose their motivation for digital resource building. In addition, digital resource building poses a challenge regarding the level of personal skills and knowledge teachers require. Teachers must continuously improve their digital literacy and familiarize themselves with various educational technology tools and platforms in the digital era. However, this may be an insurmountable obstacle for some older teachers. Although the blended learning model is half face-to-face and half online, it will still increase the pressure on these teachers, leading them to hold a resistant attitude towards the construction of digital resources or even to give up the use of digital teaching and learning tools, which will, in turn, affect teachers' satisfaction with their profession.

In summary, the impact of digital resource construction on teacher motivation in a blended education environment is a complex and worthwhile issue for in-depth study. The enhancement of teachers' motivation is one of the critical factors in the construction of digital resources, and only by solving the problem of teachers' motivation can the potential of digital resources in blended education be genuinely realized. Therefore, the research question of this study is: How do digital resources affect secondary school teachers' motivation in the process of blended learning implementation? Targeted solutions are provided by exploring the correlation between digital teaching resources and teachers' motivation to promote teachers' active participation and initiative in building digital resources to provide strong support for the sustainable development of blended education.

2. Materials and Methods

In this study, digital teaching resources and teacher motivation were selected as primary categories, and five subcategories, digital network environment, digital learning resources and digital learning platform, teacher external motivation, and teacher internal motivation, were selected as secondary factors through a survey study of related literature and interviews with secondary school teachers who implemented blended learning. Each question in the questionnaire contained a five-point Likert-Scale option, with intensity set from 1-strongly disagree to 5-strongly agree. This study used a standard sample of participants from secondary school teachers who had practiced blended learning in Guangdong Province, China. The questionnaires were collected online using the Questionnaire Star App. Five hundred thirty-three feedback questionnaires were received,

and 68 data were invalid after the data cleaning assessment. Therefore, 465 valid questionnaires were finally obtained. Demographic analysis showed that 36.77% of the secondary school teachers who participated in this questionnaire were male, and 63.23% were female. Teachers with more than ten years of working experience accounted for 53.11% of the teachers, making them a significant part of the participants in this research study. Young teachers (with less than five years of experience) accounted for 18.71%. In addition, the percentage of teachers with less than one year of practical experience in blended learning was 32.90%, and the percentage of teachers with more than three years of practical experience amounted to 31.8%. The number of participating teachers is more than ten times the number of questionnaire items, facilitating the realization of the analysis between the factors [8].

3. Result

3.1. Reliability and Constructs Validity Result

Reliability refers to the stability and consistency of the results measured by a test or scale instrument; the greater the reliability of a scale, the smaller its standard error of measurement [9]. The alpha coefficient measures one of the score reliabilities in developing scales. In the field of social sciences, scholars believe that a reliability coefficient above 0.8 indicates good reliability of the whole scale [10]. From Table 1: Digital Teaching Resources reliability coefficient value is 0.817, which is greater than 0.8, thus indicating the high quality of research data reliability. For the "alpha coefficient of item deleted," there is no significant increase in the reliability coefficient when any item deletes, thus indicating that the item should not delete. The Teachers' Motivation reliability coefficient value is 0.912, which is greater than 0.9, thus indicating that the study's data is of high-reliability quality. For the "Alpha coefficient of item deleted," there is no significant increase in the reliability coefficient when any item is deleted, thus indicating that the item should not be deleted. Regarding the "CITC value," the CITC values of the analyzed items are all greater than 0.4, which indicates a good correlation between the analyzed items, and at the same time, it also indicates that the reliability level is good [10, 11].

In summary, the coefficient value is higher than 0.8, which comprehensively indicates that the data reliability is high quality and can be used for further analysis. This time, the validated factor analysis (CFA) analysis was conducted for a total of 2 factors and 13 analysis items. From the above table, it can be seen that all the AVE values corresponding to the total two factors are more significant than 0.5, and all the CR values are higher than 0.7, which implies that the data of this analysis have good convergent (convergent) validity.

Table 1. Reliability Statistics (Cronbach Alpha) and Constructs Validity.

Category	Items	Corrected Item-Total Correlation (CITC)	Cronbach Alpha if Item Deleted	Cronbach α	CR	AVE
Digital Teaching Resources	Q1	0.528	0.798	0.817	0.732	0.578
	Q2	0.570	0.791			
	Q3	0.545	0.795			
	Q4	0.619	0.787			
	Q5	0.587	0.789			
	Q6	0.615	0.784			
	Q7	0.511	0.809			
	Q8	0.778	0.893			
Teacher Motivation	Q9	0.798	0.890	0.912	0.866	0.764
	Q10	0.824	0.886			
	Q11	0.800	0.890			
	Q12	0.679	0.908			
	Q13	0.660	0.909			

The validity study analyzes whether the research items are reasonable and meaningful. The validity analysis uses factor analysis as a data analysis method to conduct the study, respectively, through the KMO value, the joint degree, the variance explained rate value, the factor loading coefficient value, and other indexes to conduct a comprehensive analysis, in order to validate the validity level of the data. The KMO value determines the suitability of the information extraction, and the typical degree value is used to exclude unreasonable research items. The variance explained rate value indicates the level of information extraction, and the factor loading coefficient is used to measure the factor (dimension) and

question item correspondence. The explanation rate value indicates the level of information extraction, and the factor loading coefficient measures the correspondence between the factors (dimensions) and the question items, as can be seen from Table 2: the KMO value is 0.931, which is greater than 0.6, and the data shows extract information effectively. In addition, the variance explained values of the two factors are 35.823%, and 23.950%, respectively, and the cumulative variance explained after rotation is 59.772% > 50%. It means that the information on the research item can extract effectively.

Table 2. Factor Analysis.

Items	Factor Loadings	
	Digital Teaching Resources	Teacher Motivation
Eigenvalues (Initial)	8.325	1.239
% of Variance (Initial)	52.028%	7.744%
% of Cum. Variance (Initial)	52.028%	59.772%
Eigenvalues (Rotated)	5.732	3.832
% of Variance (Rotated)	35.823%	23.950%
% of Cum. Variance (Rotated)	35.823%	59.772%
KMO	0.931	
Bartlett's Test of Sphericity (Chi-Square)	4800.847	
df	120	
p value	0.000	

3.2. Linear Regression Analysis

From Table 3, the model equation is Teacher Motivation = $0.258 + 0.919 \times \text{Digital Teaching Resources}$. The model R-squared value is 0.509, which means that Digital Teaching Resources can explain 50.9% of the variation in Teacher Motivation. The F-test of the model found that the model passed the F-test ($F=479.153$, $p=0.000<0.05$), which means that Digital Teaching Resources must have a meaningful relationship with Teacher Motivation, which can be seen in the final specific analysis:

The value of the regression coefficient of Digital Teaching Resources is 0.919 ($t=21.890$, $p=0.000<0.01$), which means that Digital Teaching Resources will have a significant positive influence relationship on Teacher Motivation. This relationship indicates that rich Digital Teaching Resources can

help teachers better prepare and organize classroom instruction, provide diverse learning materials and activities, and stimulate students' interest and engagement. By utilizing these rich resources, teachers can design and carry out teaching activities more flexibly, thus enhancing their self-confidence and Motivation. Secondly, rich digital resources provide teachers with greater autonomy and self-determination. Teachers can design teaching content according to the objectives and students' needs and interests. This flexibility and freedom can stimulate teachers' creativity and sense of responsibility and increase their commitment and Motivation. The emergence of digital teaching resources also provides teachers with opportunities for professional development and innovation. Teachers can continuously learn and update their pedagogical knowledge and keep abreast of the latest educational trends and technological developments. This continuous professional development and innovation

environment can stimulate teachers' curiosity and spirit of exploration and enhance their intrinsic Motivation.

Table 3. Parameter Estimates (n=465).

	Unstandardized Coefficients		Standardized Coefficients	t	p	Covariance Diagnostics	
	B	Std. Error	Beta			VIF	Tolerance Level
Constant	0.258	0.173	-	1.496	0.135	-	-
Digital Teaching Resources	0.919	0.042	0.713	21.890	0.000**	1.000	1.000
R ²	0.509						
Adj R ²	0.508						
F	F(1,463)=479.153, p=0.000						
D-W value	1.894						
Dependent Variable: Teacher Motivation							
* p<0.05 ** p<0.01							

3.3. Correlation Analysis

As shown in Table 4, correlation analysis investigates the correlation between Extrinsic motivation, Intrinsic motivation, Network environment, Online platforms, and Resource platforms, respectively, using Pearson's correlation coefficient to indicate the strength of the correlation. Pearson's correlation coefficient indicates the strength of the correlation. The specific analysis shows that:

The correlation coefficient between Extrinsic motivation and Network environment is 0.580 and shows a significance level of 0.01, indicating a significant positive correlation between Extrinsic motivation and Network environment. The value of the correlation coefficient between Extrinsic motivation and Online platforms is 0.595 and shows significance at 0.01 level, thus indicating that there is a significant positive relationship between Extrinsic motivation and Online platforms. The value of the correlation coefficient between Extrinsic motivation and Resource environment is 0.595 and shows significance at 0.01 level, thus indicating that there is a significant positive relationship between Extrinsic motivation and Resource environment. The correlation

coefficient between Extrinsic motivation and Resource platforms is 0.524 and shows significance at 0.01 level, thus indicating a significant positive relationship between Extrinsic motivation and Resource platforms.

The correlation coefficient value between Intrinsic motivation and Network environment is 0.568 and shows significance at 0.01 level, thus indicating a significant positive relationship between Intrinsic motivation and Network environment. The correlation coefficient value between Intrinsic motivation and Online platforms is 0.524, and it is significant at 0.01 level, thus indicating that there is a significant positive relationship between Intrinsic motivation and Online platforms. The correlation coefficient value between Intrinsic motivation and Resource environment is 0.568, and it is significant at 0.01 level, thus indicating that there is a significant positive relationship between Intrinsic motivation and Network environment. The correlation coefficient value between Intrinsic motivation and Resource platforms is 0.582 and shows significance at 0.01 level, thus indicating a significant positive relationship between Intrinsic motivation and Resource platforms.

Table 4. Pearson's correlation analysis results (n=465).

	Extrinsic motivation	Intrinsic motivation	Network environment	Online platforms	Resource platforms
Extrinsic motivation	1				
Intrinsic motivation	0.764**	1			
Network environment	0.580**	0.568**	1		
Online platforms	0.595**	0.524**	0.588**	1	
Resource platforms	0.524**	0.582**	0.528**	0.577**	1
* p<0.05 ** p<0.01					

3.4. Analysis of Variance (ANOVA) Results

ANOVA (one-way analysis of variance) was used to investigate the differences between PracticingLength for Intrinsic motivation, Extrinsic motivation, Network environment, Online platforms, Resource platforms, Online platforms, and Resource platforms. As can be seen from Figure 1, the different PracticingLength samples do not show significance ($p > 0.05$) for a total of 1 item for Network environment, which means that the different PracticingLength samples show consistency and no difference for all of the items for Network environment. samples for Network environment all show consistency and there is no difference.

In addition, PracticingLength samples show significance ($p < 0.05$) for Intrinsic motivation, Extrinsic motivation, Online platforms, Resource platforms, and a total of 4 items, meaning that different PracticingLength samples show consistency and no difference for the Network environment. PracticingLength samples have differences for Intrinsic motivation, Extrinsic motivation, Online platforms, and Resource platforms. The specific analysis shows that:

PracticingLength for Intrinsic motivation shows a 0.05 level of significance ($F=2.694$, $p=0.030$) and a specific comparison of the differences. There is a more significant difference between the group mean scores comparison results of "1.0 > 4.0; 3.0 > 4.0; 5.0 > 4.0; 5.0 > 4.0; 5.0 > 4.0; 5.0 > 4.0;

5.0 > 4.0; 5.0 > 4.0; 5.0 > 4.0; 5.0 > 4.0. 5.0 > 4.0". PracticingLength shows a 0.01 level of significance ($F=6.899$, $p=0.000$) for Extrinsic motivation, as well as specific comparative differences, with more significant differences in group mean scores as follows "2.0 > 1.0; 3.0 > 1.0; 1.0 > 4.0; 2.0 > 4.0; 2.0 > 5.0; 3.0 > 4.0; 3.0 > 5.0". PracticingLength for Online platforms showed a significance at the 0.01 level ($F=4.336$, $p=0.000$). 4.336, $p=0.002$), as well as the specific comparison of the differences, can be seen. There is a more significant difference between the group mean score comparison results for "2.0 > 1.0; 3.0 > 1.0; 1.0 > 4.0; 2.0 > 4.0; 3.0 > 4.0; 5.0 > 4.0". PracticingLength for Resource platforms showed a 0.01 level of significance ($F=9.843$, $p=0.000$). There is a more obvious difference in the group mean score comparison results for "3.0 > 1.0; 5.0 > 1.0; 3.0 > 2.0; 5.0 > 1.0; 3.0 > 2.0; 5.0 > 4.0; 3.0 > 4.0; 5.0 > 4.0; 3.0 > 4.0". 3.0 > 1.0; 5.0 > 1.0; 3.0 > 2.0; 5.0 > 2.0; 5.0 > 3.0; 5.0 > 4.0".

In general, secondary school teachers with more than five years of practice had more urgent requirements for the teaching resource platform, which could no longer meet their teaching requirements regarding updating speed and updating individual works. Secondary school teachers with three years of practice were significantly more motivated by the teaching platform, both internally and externally, than teachers with other years of practice. This group of secondary school teachers was more proficient with the digital teaching platforms they used and were more satisfied with their personal lessons' design. Teachers who had achieved specific accomplishments, such as winning competitions, awards, and promotions, were more willing to implement blended learning. This group of secondary school teachers was satisfied with the resources and support their schools gave. Teachers with four years of practice reached the lowest point regarding internal motivation, external motivation, teaching resources, and teaching platforms.

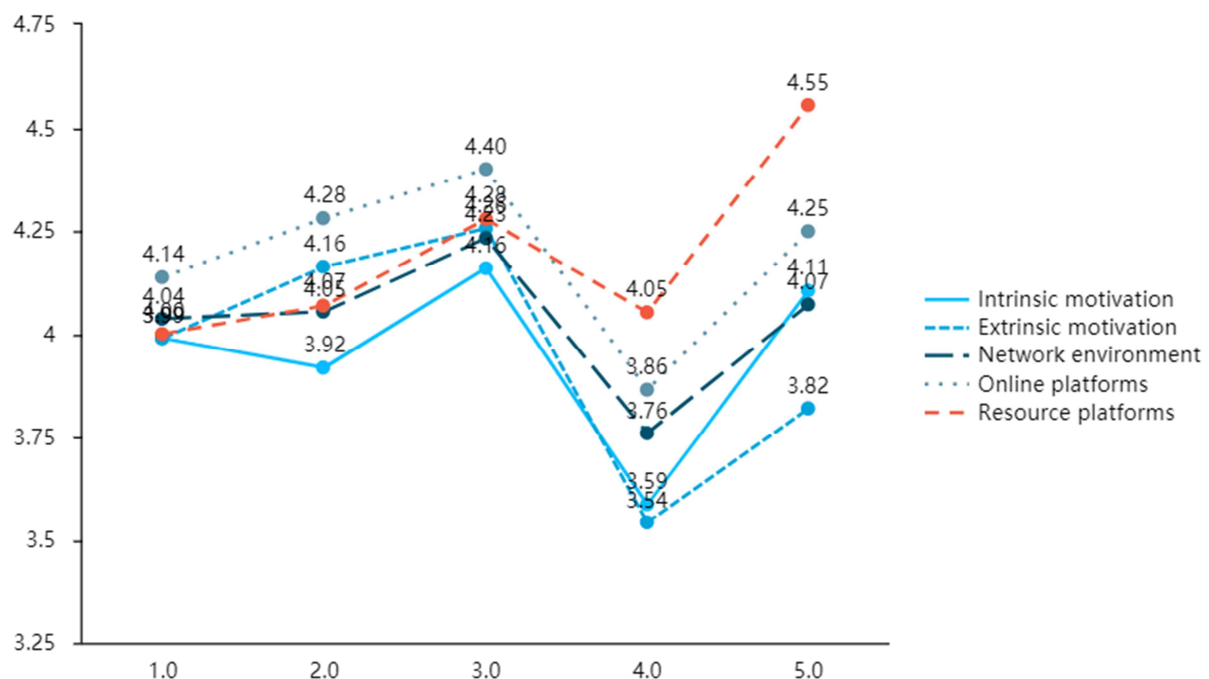


Figure 1. ANOVA analysis results.

3.5. Path Analysis

Resource platforms will have a significant positive effect on Extrinsic motivation with a standardized path coefficient value of $0.271 > 0$ ($z=6.163$, $p=0.000<0.01$) and Intrinsic motivation with a standardized path coefficient value of $0.250 > 0$ ($z=7.538$, $p=0.000<0.01$). 0.01), all of which produce a significant positive relationship. Online platforms have a standardized path coefficient value of $0.438 > 0$ for Extrinsic motivation, and this path exhibits significance at the 0.01 level ($z=9.988$, $p=0.000<0.01$), thus indicating that Online platforms will have a significant positive influence relationship on Extrinsic motivation, as shown Figure 2.

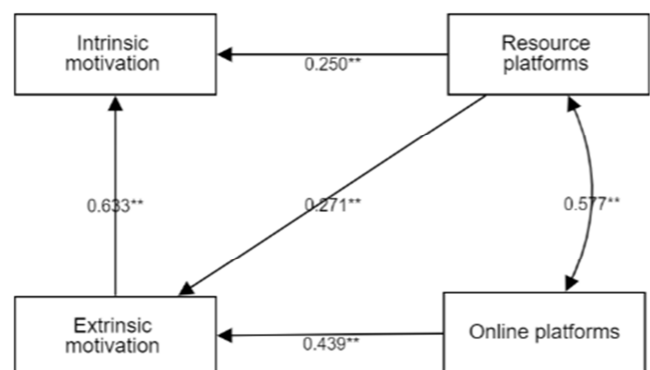


Figure 2. The results of the path analysis between the factors.

4. Discussion

4.1. Performance of Digital Resource Development Core Roles

Satisfaction with the digital resource platform positively affects both teachers' internal motivation (standardized path coefficient value of 0.250) and external motivation (standardized path coefficient value of 0.271). Teachers' internal motivation refers to their deep-seated self-drive, including their love for education, concern for student learning outcomes, and desire for personal growth. Teachers will be more motivated to engage in teaching if the digital resource platform provides high-quality, diverse, easy-to-use resources that meet their pedagogical needs and creative potential. Teachers' external motivation refers to incentives and rewards from the external environment, such as salary, career development, and social recognition. If the digital resource platform can provide teachers with valuable teaching resources, technical support, and professional development opportunities, teachers will be more willing to utilize the platform to improve their teaching effectiveness, thus enhancing their external motivation. China adopts a pre-determined resource construction model in its digital resource construction approach. In other words, the digital resources teachers use to implement the blended learning model are provided by government departments, and the learning resources are designed in advance by some pedagogues, designers, or curriculum development companies. In order to correspond to the teaching materials, these resources are limited by the teaching contents in the development process and the way of resource presentation often only reflects the experience of the designers or developers. Lack of follow-up supportive maintenance and slow updating have become typical features of these digital resources. In China, 76% of national-level online high-quality courses have yet to be updated within six months [12]. This phenomenon is particularly significant, as reflected in the regression analysis results.

With the development of blended learning mode practice time, the inherent digital resources have been unable to meet the needs of teachers' teaching and even lost their original value of use, gradually aging down to useless resources. Teachers' desire for high-quality digital resources is significant. As for learners, they are more looking forward to high-quality digital resources, such as the reception of information from multiple sources, parallel processing of multi-tasks, sound and image quality, real-time interaction, and the fun of digital resource performance. It undoubtedly affects teachers' intrinsic and extrinsic motivation. Individual teachers need help to independently invest in and realize the design and updating of digital resources. On the one hand, teachers need to invest a lot of time and energy in the process of digital resource development, which increases teachers' workload, which is in line with the research view of some experts [13-15].

On the other hand, no school policy recognizes teachers' input in digital resources. We must admit that teachers'

experience of teaching tends to be more stable and stereotypical compared to the experience of learning, so digital resources based on teaching for teaching inevitably show the characteristics of conformity, and these resources are unable to meet the learners' individualized learning needs fully. Therefore, in promoting the process of digital teaching, digital resource construction plays a central role. Teachers need to improve the process of digital resource construction from the following two aspects. First, pay attention to digital resource construction's personalized customization and adaptability. The digital resource platform should be able to personalize and customize according to teachers' needs and feedback. The digital resource platform can provide flexible setting options so teachers can choose suitable teaching resources and tools according to their teaching style and students' needs. Second, the digital resource platform establishes a feedback mechanism for updating teachers' resource design to provide teachers with professional development opportunities.

On the one hand, platform developers should actively collect teachers' feedback on the digital resource platform and improve and upgrade the platform based on the feedback. This kind of communication and cooperation can enhance teachers' participation and satisfaction and improve their internal and external motivation for the platform. On the other hand, evaluation and assessment criteria are established based on teachers' contributions to the resource platform, such as the number of teaching resources uploaded, updated, and downloaded. The number of seminars, training courses, and online community interactions attended. This format not only helps teachers to continuously improve their teaching skills and knowledge and enhance their internal motivation but also provides a reference for the school's reward mechanism and workload recognition.

4.2. Differential Years of Practice Influences Satisfaction with Digital Teaching Resources and Teacher Motivation

Blended learning is a teaching model that combines traditional classroom teaching and online learning to provide a more personalized and flexible learning experience. However, if secondary school teachers experience a minimum of intrinsic motivation, extrinsic motivation, and satisfaction with the resource platform in the fourth year of implementing blended learning, this may affect the quality of teaching and student learning outcomes. We need to recognize that secondary school teachers who can implement blended learning are one of the fundamental forces that can steadily grow into smart educators in the future. These teachers are proficient in the education business and in the application of new information technologies, which is essential support for promoting the rapid development of innovative education in China. Teachers' professional growth is a dynamic process. The variability in teacher motivation presented in the results of this study in terms of teachers' years of practicing blended learning suggests that schools still need to pay attention to the impact of teachers' practical experience in terms of their personal growth. In order to improve the level of teacher

motivation, schools can organize professional development training so that teachers can understand the latest trends in blended learning and teaching methods. However, for teachers with different practical experiences, the training content should reflect differences and individualization. It can enhance teachers' confidence and competence, thus increasing their intrinsic motivation. Second, schools should establish a system to support teachers in implementing blended learning, including establishing a shared teaching community, incentives, and timely feedback mechanisms. Schools can provide in-school training sessions for teacher training. Teaching communities can be organized within the school so that teachers can exchange experiences, share teaching resources and solve problems with each other. It can increase teachers' professional satisfaction and promote learning and growth among each other. These teachers implementing blended learning can be directly involved in implementation evaluation criteria, technological innovation, and platform optimization, stimulating teachers' extrinsic motivation to work harder to implement blended learning and feel that their efforts are worthwhile.

4.3. The Positive Effect of Digital Learning Platforms on Teachers' External Motivation

The results of this study show that digital learning platforms are significantly correlated with teachers' external motivation, with a correlation coefficient value of 0.595, indicating a positive and strong correlation between digital learning platforms and teachers' external motivation. The development of digital learning platforms is still in the exploratory stage, and the learning platforms adopted by different schools are different. In the process of application, learning platforms reveal their defects:

- (1) The interface design of the existing digital learning platform needs to be simplified, and teachers need to spend a long time familiarizing themselves with its process. The learning platform's inconvenient operation and impaired functions make teachers encounter difficulties and frustrations. This poor user experience may cause teachers to feel dissatisfied with the platform and reduce their external motivation.
- (2) Learning platforms that do not meet teachers' individualized pedagogical needs, such as a lack of teaching resources and tools for different subjects, grades, or teaching styles, may restrict teachers and diminish their external motivation for the platform.
- (3) The immaturity of the learning platform can lead to frequent technical problems or instability, such as difficulty in logging in, slow loading, or frequent crashes, and teachers' experience will be significantly affected.

Frequent technical problems may frustrate teachers, which may also diminish their external motivation toward the digital platform. Therefore, the impact of digital learning platforms on teachers' external motivation should attract the full attention of school administrators. In promoting digital education, schools should promote applications bred from

actual classroom teaching and learning processes. The speed of iteration of digital learning platforms in the development process is much faster than teachers' familiarity with and use of digital platforms. However, the speed of technological updates is only one of the reasons hindering the development of digitalization in education. Schools or platform developers should pay attention to teachers' experience and continuously optimize the digital learning platform while also assisting teachers in observing the practice of blended learning to form a clear technical path for promoting blended learning through educational reforms and ongoing trial and error in practice.

5. Conclusion

The essence of digital advancement in education lies in practice, and the practice of large-scale blended learning in secondary schools provides a wealth of experience for future systemic changes in digital education. Digital learning resources and teacher motivation are critical factors for implementing blended learning effectively. A survey study of secondary school teachers implementing blended learning in Guangdong Province, China, shows a significant correlation between digital teaching resources and teacher motivation. The specific manifestations are as follows:

- (1) The construction of digital learning resources is at the core of influencing teachers' intrinsic and extrinsic motivation. The rapid development of artificial intelligence technology has become a "gas pedal" to promote and optimize the circulation and sharing of teaching resources. However, the rapid change of digital resources is contrary to the stability of teachers' teaching mode, which is the main reason for the decrease in teachers' motivation. Teachers in the process of blended learning practice have realized that simply providing learning content is challenging to promote high-quality and meaningful learning. The preset nature of digital resources can no longer meet teachers' teaching needs, and resource construction's dynamic, generative, and intelligent nature is the future development trend. Changing the direction of the existing digital resource construction can stimulate teachers' motivation and encourage teachers to invest better in digital teaching change.
- (2) Emphasize the impact of teachers' blended learning practice experience on digital teaching resources and teachers' motivation. Years of practice are a reflection of teachers' teaching experience in the process of implementing blended learning but also a record of teachers' professional development and growth. The school administration should emphasize the sharing and motivation of teachers' practical experience and provide further support and reward strategies for teachers with different years of practice, which will enhance teachers' intrinsic and extrinsic motivation. Teachers will also be better engaged in blended learning practice.
- (3) The digital learning platform used to support the implementation of blended learning only affects

teachers' external motivation and does not significantly affect teachers' internal motivation. The digital learning platform carries digital resources and teachers' instructional design. Chinese secondary schools uniformly purchased digital learning platforms and provided them to teachers. Since the learning platforms are inconsistent across schools, it would improve teachers' external motivation if schools monitor and provide feedback on teachers' experiences with the platforms and if the platform developers provide teachers with training and technical support on using the platforms.

References

- [1] Huang, R. H.; Yao, Y.; Liu, J.; Wang, H. H.; Yang, D.; Wang, S. F.; Li, J. H.; Renato Opertti; Ahmed Tlili; Yang, J. F.; Zhang, D. W.; Kang, C. Y.; Yang, Y (2022). *Hybrid Education, Learning, Assessment*. Beijing: National Engineering Research Center for Internet Education Intelligent Technology and Application. <https://creativecommons.org/licenses/by/4.0/legalcode.zh-Hans>.
- [2] Burgess, Simon, and Hans Henrik Sievertsen (2020). "Schools, skills, and learning: The impact of COVID-19 on education." *VoxEu.org* 1.
- [3] Chen, Tinggui, Lijuan Peng, Xiaohua Yin, Jingtao Rong, Jianjun Yang, and Guodong Cong (2020). "Analysis of user satisfaction with online education platforms in China during the COVID-19 pandemic." In *Healthcare*, vol. 8, no. 3, p. 200. Multidisciplinary.
- [4] Wang, Chuanyi, Zhe Cheng, Xiao-Guang Yue, and Michael McAleer. "Risk management of COVID-19 by universities in China." (2020): 36.
- [5] Mseleku, Z. (2020). A literature review of E-learning and E-teaching in the era of Covid-19 pandemic. *International Journal of Innovative Science and Research Technology*. vol. 5, Issue 10. p. 588-597.
- [6] Crawford, Joseph, Kerryn Butler-Henderson, Jürgen Rudolph, Bashar Malkawi, Matt Glowatz, Rob Burton, Paulo Magni, and Sophia Lam. (2020) "COVID-19: 20 countries' higher education intra-period digital pedagogy responses." *Journal of Applied Learning & Teaching*, 3, no. 1, p. 1-20.
- [7] Kerres, Michael (2020). "Against all odds: Education in Germany coping with Covid-19." *Postdigital Science and Education*: 1-5.
- [8] Zhou J. (2017). *Questionnaire data analysis-Cracking the six categories of analysis ideas of SPSS* [M]. Electronic Industry Press.
- [9] Wu, M. L. (2021). *Questionnaire Statistical Analysis Practice-SPSS Statistical Analysis and Practice Operation and Application*. Chongqing University Press. pp. 237–238, 249.
- [10] Taber, K. T. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 48, 1273-1296. <https://doi.org/10.1007/s11165-016-9602-2>
- [11] The SPSSAU project (2023). SPSSAU. (Version 23.0) [Online Application Software]. Retrieved from <https://www.spssau.com>.
- [12] Yang, X. M. (2017). *Internet + education: learning resource construction and development*. Electronic Industry Press.
- [13] Ibrahim, M. M.; Nat, M. Blended learning motivation model for instructors in higher education institutions. *Int. J. Educ. Technol. Higher Educ.* 2019, 16, 1–21. DOI: 10.1186/s41239-019-0145-2.
- [14] Lai, M.; Lam, K. M.; Lim, C. P. (2016). Design principles for the blend in blended learning: A collective case study. *Teach. High Educ.* 2016, 21, 716–729. DOI: 10.1080/13562517.2016.1183611.
- [15] Huang, Q. (2019). Comparing teacher's roles of F2f learning and online learning in a blended English course. *Comput. Assist. Lang. Learn.* 2019, 32, 190–209. DOI: 10.1080/09588221.2018.1540434.