

The Effects of Online Role-play Teaching Practice on Learners' Availability for Resources

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Abstract—With the support of mobile Internet, artificial intelligence, and other technologies, online teaching bridges the shortcomings of traditional class teaching patterns and considerably helps to achieve the high-quality development of education. Role-playing, as a critical teaching practice, is intended to ensure experiential learning in various circumstances by improving the efficiency and availability for educational resources. A questionnaire to explore the effect of online role-playing teaching practice on learners' availability for resources was designed. Students majoring in scientific English from three colleges and universities in Xi'an, Shaanxi Province of China were selected as the survey object to analyze the impacts of the role-playing teaching method on self-planning, self-monitoring, self-regulation, and self-evaluation of learning resource utilization. The effects of students' self-efficacy as the intermediary variable and teachers' professional title as the moderating variable were also measured. Meanwhile, differences in gender, grade, and familiarity time for the role-playing teaching method on the utilization of learning resources were analyzed. Results show that the questionnaire designed in this study has a good reliability coefficient of 0.927; the AVE and CR values show that the questionnaire has good aggregate and discriminant validities; self-efficacy mediates the effect in the role-playing teaching method and can effectively improve the utilization of learning resources; teachers' professional titles regulate the role-playing teaching method, which can effectively improve learners' utilization of learning resources; role-playing teaching method has a significant impact on learners' self-planning, self-monitoring, self-regulation, and self-evaluation of using of learning resources; and gender and role-playing teaching method familiarity cause significant differences in the utilization of learning resources. Findings can help to grasp the essence of role-playing teaching method, build a teacher-led and student-centered classroom teaching model, provide teachers with more scientific and effective guidance, and improve students' autonomous learning effect and learning resources.

Keywords—online teaching, role-playing, learning resources, availability

1 Introduction

Globally, online teaching promotes the knowledge sharing of educational resources in different geographical areas and at different times by using the Internet as the carrier and mobile phones or computers as learning ports. In recent years, under the influence of national macro policies, school classroom teaching reform, and information technology progress, online teaching has better reflected the continuous integration and development of information technology and all kinds of education. Based on the effective interaction between learners and teachers using flipped classroom and ubiquitous form, the ultimate goal is to comprehensively improve the teaching quality, optimize the supply mode of related services, and drive the fundamental innovation of organization system and talent training mode. However, in 2020, Coronavirus disease 2019 hindered the regular global educational communication. Hence, online teaching became the best choice to overcome the impact of the pandemic by providing learners with better, efficient, and flexible educational services through advanced information technology such as cloud computing, artificial intelligence, and the Internet of Things. In online teaching, a teacher and a learner should communicate effectively and efficiently to generate the best learning output. Given a certain physical isolation in virtual communication between the above two parties, role-play teaching practice is likely to shorten the intimacy distance and ease its associated anxiety. From the teacher's viewpoint, this practice involves organizational skills for the entire online class, thus representing the teacher's efficiency. In addition, online role-play teaching practice requires the student to be more initiative as a learner, serving as the midpoint, and generate more positive effect from online learning. Meanwhile, the teacher becomes an advisor, offering advice on learning methods and monitoring the process, which quite differs from their traditional role teacher-centered class pattern. Working together for a learning objective, each student can also play a role as teacher, making good use of available online learning resources from the Internet to improve learning efficiency.

With the gradual maturity of various technologies, such as the online teaching platform, more teaching managers pay increasing attention to the construction of online learning resources. Traditional classroom teaching resources cannot be directly used in the online mode, thereby necessitating the development of online learning resources. Given its requirement for efficient learning in a short time, online learning resources are characterized by continuous generation, meeting personalized needs and becoming more intelligent. A greater emphasis is placed on the systematic construction and high-quality application of learning resources. The role-playing teaching method fully integrates the concept of happy learning and realizes the complete interaction between teachers and students. Thus, the learning atmosphere and communication mode can improve, effectively realizing the interaction between teachers and learners, enabling more students to participate in different role identities as well as understand and absorb knowledge quickly and efficiently. In the learners' continuous acceptance, analysis, evaluation, and feedback of learning resources, their awareness is stimulated, abilities are improved, and learning skills are exercised.

2 Theoretical basis and hypotheses

2.1 Theoretical basis

Constructivist teaching view advocates that the entire teaching process must involve the analysis of educational objectives. These objectives are not only of the entire discipline, but also of each unit to determine the theme of the current teaching activities. Meanwhile, teachers must gain clues to create realistic situations related to the theme. This constructive concept is the theoretical prototype for role-play teaching practice. Bodner, G. M [1] recollected Jean Piaget's intelligence development theory, and on this basis, generally stated how to construct knowledge and illustrated the so-called radical Constructivism. Hedin, N [2] believed that experiential teaching is one of the important modes to motivate communication between teachers and students, and this concept is also a theoretical foundation for role-play teaching practice. The experiential teaching mode attaches great importance to learners' direct involvement by trying out the teaching tools, thereby constructing operating skills to achieve a better sense of personal value. This mode has its own working mechanism for each individual as learners, attaching their external environments and internal cognitive systems. For instance, the learners can use their senses to observe, listen, and do activities, thus improving their cognitive and emotional sensitivities. Extensive literature has confirmed that the experiential teaching mode can help learners improve their conceptual understanding, learning confidence, critical thinking, and problem-solving ability.

How role-play teaching practice triggers positive learning performance and its effect on the availability for learning resources have generated different viewpoints. Alkin, M. C et al. [3] explored how role-play teaching practice in the experiential teaching mode helps improve post-graduates' positive learning performance, and found that this method enables more students to participate and to better receive complicated concepts. McSharry, G et al. [4] considered role-play teaching practice as an effective means of attaining more learners' participation and helps trigger their intrinsic motivation. Similarly, Joyner, B et al. [5] argued that role-play teaching practice helps prompt a learner's intrinsic motivation. He analyzed a well-planned, organized role-play teaching practice in a clinical rotation of medical courses, concluding that this practice is one of the most practical teaching modes that all the students must join to experience a meaningful experiential teaching environment. Jackson, V. A et al. [6] stated that role play, as an important method in group teaching, is a required skill used in certain awkward, meticulous dialogue with seriously ill patients. Rosnow, R. L [7] studied how role-play teaching practice helps increase learner's critical thinking and appreciation of ethics. Magos, K et al. [8] viewed role-play teaching method as a means of improving second language acquisition, allowing immigrants to practice a new language in communicative situations in real life, which in turn enables them to enrich their vocabulary, train a new skill, and develop attitude. Rao D et al. [9] described a forward role-play practice that triggers a learner's extrinsic and intrinsic motivation in learning by seeing the viewpoints of a role or object to have an authentic experiential learning experience.

Stevens, R [10] sees role-playing as an effective learning strategy to initiate motivation, which has been used to arouse passive learners to participate in class performance and cultivate a lively class atmosphere, providing true vitality and keeping the material for later use. Heyward, P [11] viewed role-play teaching practice as a challenge to trigger students' affect in language learning, which enables participation in the experience to enhance their performance. Based on a learning cycle theory, Gibson, L. A et al. [12] analyzed students' performance in their group experiential learning drills, which demonstrates organizational behavior and leadership concept, designed to promote further learning and generate more feedback. Cho, Y. H et al. [13] explored the effect of virtual role-play practice, focusing on the effect of the situational interest and perceptual achievement out of the physical and social existence. Teachers' age and cognitive conviction previous to the occupation are found to greatly influence their physical and social existence, which requires more attention in the teaching process. Okpechi, P. A et al. [14] considered electronic resources as tools to enrich educational content and assure its quality. Trainee counselors highly valued these electronic learning resources but overestimated its availability, believing normally have problems such as availability, commonality, adequacy, even quality. Nestel, D et al. [15] described role-play as a communicative learning method in education, suggesting that the key to role play practice is to provide learners with more opportunities to observe, rehearse, discuss, and adjust between their real and course roles. Mariais, C et al. [16] adopted a role-play game scene to arouse a designer's interest and enhance confidence in learning programs based on games. Russell, C et al. [17] found that online role-play practice should meet both the teacher's and the learners' requirements, which should be especially considered in higher education.

2.2 Hypotheses

Based on the above-mentioned literature review, role-play teaching practice is clearly a widely adopted method all over the world, especially in situational education in which students are divided into groups, making joint efforts to lay out their learning objectives, decide on each role and its responsibilities, learn how to coordinate, and communicate to tap the potential of each person. Role-play teaching practice has remarkable advantages, such as helping promote learners' affect or emotional communication, inter-communication, and awareness of autonomy by independently using learning resources. On the basis of these advantages of role-play teaching practice, we present our four hypotheses:

H1: Role-play teaching practice helps promote learners to plan for how to make good use of available resources.

H2: Role-play teaching practice helps learners autonomously monitor the availability of online resources.

H3: Role-play teaching practice helps learners autonomously adjust the availability of online resources.

H4: Role-play teaching practice helps learners autonomously assess the availability of online resources.

Considering role play as a teaching practice that involves a teacher's illustration process to convey messages that enable learners to obtain more resources, enhancing learners' availability for online resources requires attention. According to the content of the role-play task, a learner-centered role-play practice can be designed; hence, the term 'self-efficacy' has been adopted as a mediating variable in our analysis. Bandura, A [18] well defined self-efficacy. Gautam, V et al. [19] surveyed how self-efficacy and self-achievement demand affects students' perception in their availability for online learning resources, which is highly influenced by self-efficacy. Puzifferro, M [20] indicated that in online learning, time, environment, and efforts to adjust correlate to performance. Betoret, F. D [21] carried out a survey and indicated that teachers who acquired a higher degree of self-efficacy and had access to more online resources turned out to bear less pressure and fatigue in their career. Kultawanich, K et al. [22] showed that students might regard application programs as supplementary online resources that are not affected by time and space, and thus allow students to be generally satisfied with online available resources. On the basis of these findings, we present the fifth hypothesis.

H5: Role-play teaching practice enhances learners' self-efficacy, which serves as a medium of their availability of online resources.

Given that teachers are the organizers who also implement role-play practice, whether they can effectively accomplish their teaching plans or not also affects students' availability for resources. In China, professional ranks have been listed as one of the core indexes for measuring a teacher's effectiveness or quality. The higher professional ranks attained, the more likely the teachers can adopt a new teaching method; the more updated methods they use, the more enthusiasm the teachers can pour into teaching reform as to pattern or mode. Therefore, professional ranks can be viewed as a moderating variable. These professional ranks fall into four categories in China, namely, assistant teacher (junior phase), lecturer (second phase), associate professor (third phase), and professor (senior phase), which are analyzed in this study. Thus, we present out sixth hypothesis.

H6: A teacher's professional ranks can be considered as a moderating factor in role-play teaching practice.

3 Experimental design

3.1 Questionnaire design

Based on the references obtained thus far, a questionnaire has been designed with three parts. The first part discusses the subjects and their basic personal information such as gender, grade, major, professional ranks, and the length of time adopted for role-play teaching practice. The second part is the body of the questionnaire, containing nine questions for role-play teaching practice. The third part measures the availability for online learning resources and how learners make use of these materials. The measurement consists of four aspects: autonomous planning (4 items), autonomous monitoring (5 items), autonomous adjusting (5 items), and autonomous

evaluation (4 items). As for self-efficacy, we adopt the questionnaire designed by Pintrich, P. R et al. [23] with eight questions. All the questions surveyed are measured by using a Likert 5-point scale.

3.2 Subject

In response to an initiative of implementing education information project 2.0 in Shaanxi Province, China, the so-called “Internet plus education” pattern has been carried out to realize a deep integration of these two aspects in the new era, developing a new ecology and education system. As the capital city of Shaanxi Province, Xi'an has obtained support of educational policies from the government, thereby facilitating cloud computing, big data, 5G advanced techniques, and enhanced efficiency in promoting the Internet plus education pattern. In view of the online education platform requirement for a good configuration of hardware foundation, the subject surveyed is from three ordinary high schools in Xi'an, which have been given 3,900,000 ¥ financial support from the provincial and municipal governments. Thus, with thorough education information platforms, teachers have carried out various reforms to innovate their teaching pattern or mode by applying various methods into their daily routine and practice. These innovations have yielded remarkable teaching results from positive feedback. With the popularity of role-play teaching practice among English majors, these students from the three mentioned schools have been set as the research subject. Previous to the fall term of 2021–2022, 234 questionnaires have been distributed to the subjects, and 201 have been recollected. Removing invalid questionnaires has yielded 185 questionnaires, accounting for 79.06% of the total, for analysis. Table 1 shows the personal information of the subjects and frequency analysis results.

Table 1. Personal information of the subjects and frequency analysis results

Item	Choice	Frequency	percentage (%)	Cumulative percentage (%)
gender	female	114	61.62	61.62
	male	71	38.38	100
grade	freshman	22	11.89	11.89
	sophomore	59	31.89	43.78
	junior	70	37.84	81.62
	senior	34	18.38	100
Professional ranks	teaching assistant	45	24.32	24.32
	lecturer	68	36.76	61.08
	associate professor	49	26.49	87.57
	professor	23	12.43	100
The length of time that the learners are practicing role play	less than 1 month	3	1.62	1.62
	1-6 months	16	8.65	10.27
	6-12 months	44	23.78	34.05
	1-3 years	55	29.73	63.78
	3-5 years	66	35.68	99.46
	More than 5 years	1	0.54	100
Total		185	100	100

Table 1 shows that more female students major in Scientific English. Fewer seniors are involved in the survey, possibly due to the pressure of job hunting. The professional ranks of teachers tend to be reasonably distributed. Role-play teaching practice is popular among senior middle school students in China, given their familiarity with this teaching practice, such as for approximately 3–5 years.

4 Results and discussion

4.1 Reliability and validity analysis

Table 2 shows that the overall Cronbach's α coefficient of the questionnaire is 0.927, greater than 0.9, indicating a good reliability of collected data.

Table 2. Cronbach reliability analysis

Variable name	Component factors	Serial number	Corrected item total correlation (CITC)	Deleted item α coefficient	Cronbach α coefficient	Cronbach α coefficient
Role-playing (X)	Role-playing teaching model (Factor1)	A1	0.684	0.916	0.923	0.927
		A2	0.695	0.916		
		A3	0.733	0.913		
		A4	0.749	0.912		
		A5	0.636	0.919		
		A6	0.694	0.916		
		A7	0.755	0.912		
		A8	0.817	0.907		
		A9	0.748	0.912		
Utilization of learning resources(Y)	Self-Planning (Factor2)	B1	0.776	0.779	0.852	
		B2	0.755	0.786		
		B3	0.783	0.774		
		B4	0.489	0.899		
	Self-monitoring (Factor3)	C1	0.739	0.851	0.882	
		C2	0.775	0.842		
		C3	0.748	0.849		
		C4	0.745	0.850		
		C5	0.578	0.886		
	Self-regulating (Factor4)	D1	0.966	0.961	0.974	
		D2	0.866	0.976		
		D3	0.966	0.961		
		D4	0.881	0.975		
		D5	0.945	0.964		
	Self-evaluation (Factor5)	E1	0.643	0.957	0.922	
E2		0.902	0.870			
E3		0.883	0.877			

		E4	0.867	0.883		
Self-efficacy (M)	Self- efficacy (Factor6)	M1	0.662	0.833	0.857	
		M2	0.561	0.844		
		M3	0.574	0.842		
		M4	0.563	0.843		
		M5	0.631	0.837		
		M6	0.522	0.853		
		M7	0.763	0.818		
		M8	0.570	0.843		

Table 3 shows that AVE values corresponding to most factors are all greater than 0.5, and CR values are all higher than 0.7, indicating that the analyzed data has good convergence validity.

Table 3. AVE and CR index results of the model

Factor	AVE value extracted by mean variance	Combined reliability CR value
Factor1	0.577	0.924
Factor2	0.613	0.859
Factor3	0.611	0.886
Factor4	0.870	0.971
Factor5	0.774	0.931
Factor6	0.440	0.860

Table 4 shows that for factors 1–6, the AVE square root values are all greater than the maximum absolute values of correlation coefficients among factors, indicating good discriminative validity.

Table 4. Discriminative validity: Pearson correlation and AVE square root value E

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
Factor1	0.759	-	-	-	-	
Factor2	0.377	0.783	-	-	-	
Factor3	0.505	0.439	0.782	-	-	
Factor4	0.504	0.433	0.729	0.933	-	
Factor5	0.521	0.349	0.733	0.830	0.880	
Factor6	0.451	0.641	0.412	0.576	0.614	0.664

4.2 Regression analysis

Table 5. Regression results

Influence path	Normalization coefficient	T	P	F	Yes or No
factor1->factor2	0.505	7.909	0.000**	F (1, 183) =62.551, p=0.000	Yes
factor1-	0.377	5.498	0.000**	F (1,183) =30.226,	Yes

>factor3				p=0.000	
factor1- >factor4	0.521	8.266	0.000**	F (1,183) =68.325, p=0.000	Yes
factor1- >factor5	0.504	7.892	0.000**	F (1,183) =62.280, p=0.000	Yes

* $p < 0.05$ ** $p < 0.01$

Through regression analysis, the following outcomes can be drawn from Table 5.

(1) H1 is supported. That is, role-playing teaching method can effectively improve learners' self-planning of resource utilization, mainly by helping improve their usage planning. Teaching activities cannot be separated from its objectives, and thus determining the implementation of role-playing activities following the main goals is necessary. Each discipline has its teaching objectives, the teachers need to be oriented on goal setting via teaching role-playing activity goals before the start of online learning. These activities can also help learners to understand and know the pre-set learning resource information of the schools or educational institutions, such as the type, quantity, and features. Combined with the actual situation of current knowledge, learners can choose more suitable plans for their own learning resources for learning. Several resources, such as the online courses and multimedia courseware, require learners to have basic computer operation skills and knowledge in advance to reduce the technical obstacles and problems encountered in learning.

(2) H2 is supported. Role-playing teaching practice can effectively improve learners' self-planning of resource utilization. The main reason is that in role-playing teaching, teachers need to introduce students to the historical background where the story takes place and let them design dialogues and interviews according to specific scenes. Thus, students can clarify the story environment and the identity of the characters, a background information that can help students understand their roles. By grasping the situation of role-playing, self-examination and supervision can be realized in using the preset resources on campus. After the initial stage of learning, learners may find that the selected resources are inconvenient for economic, time, or operational reasons, and then consider whether other resources are available for replacement. From time to time, learners can also check whether they need to change the previously selected resources according to the learning objectives and content. Teaching materials are a good choice for theoretical learning in the early stage, but video demonstration can achieve more visual effects in experimental stages.

(3) H3 is supported. Role-playing teaching practice can effectively improve learners' self-regulation of learning resource utilization. The main reason is that this method can provide learners with more preparation time, to better communicate with each other and polish knowledge points in a more in-depth and interactive learning. In this way, learners can determine whether and how to adjust the selected resources according to the feedback of the monitoring link. When using inappropriate resources or needing to change materials according to the learning content, learners must adjust the progress of internal knowledge and processing through external modifications. A wide range of learning resources is available. Learners need to decide the sequence of learning resources to use, or to judge the main materials when using several at once,

such as paper and electronic teaching materials, PowerPoint presentations, or auxiliary learning resources, such as CD, video, and 3D interactive resources.

(4) H4 is supported. role-playing teaching practice can effectively improve learners' self-evaluation of resource utilization. The main reason is that in actual role-playing classes, teachers assign homework after class, conduct online teacher–student evaluation, and allow students to evaluate each other in a timely manner. Learners' self-evaluation of present resources in school can occur during or after learning. First, learners should pay attention to whether the selected learning resources achieve the predetermined objectives. If not, the steps can be improved or more appropriate learning resources can be used. Second, learners need to evaluate their mastery of used media, reflect on the advantages and disadvantages of various resources, as well as master and use various resources more skillfully through subsequent learning. Finally, learners must make a comprehensive evaluation of their self-planning, self-monitoring, and regulation of resources in each learning stage to lay a good foundation for the future use of educational resources.

4.3 Mediating effect analysis of self-efficacy

Table 6 shows that H5 is supported. Self-efficacy plays a mediating role in role-playing teaching to improve the utilization of learning resources. The main reason is that self-efficacy is the expression of learners' endogenous motivation, and role-playing is one of the teaching methods initiated by teachers. Students have no right to choose the teaching method, and they may have the mentality of accepting or resisting such practice. Several students who are less willing to accept role-playing instruction have less self-efficacy to complete learning tasks. This finding also inspires teachers to consider the influence of the nature of curriculum, the characteristics of students, and other factors when using role-playing. However, teachers must not be forced to adopt role-playing only because of the administrative teaching reform.

Table 6. Mediating effects

	Y	M	Y
Constant	2.186** (10.191)	2.403** (11.733)	-0.116 (-1.002)
X	0.496** (9.477)	0.448** (8.975)	0.067** (2.609)
M	-	-	0.958** (30.476)
	185	185	185
R ²	0.329	0.306	0.89
Adjustment R ²	0.326	0.302	0.889
F value	F (1,183) =89.823, p=0.000	F (1,183) =80.543, p=0.000	F (2,182) =736.988, p=0.000

* $p < 0.05$ ** $p < 0.01$ t value in parentheses

4.4 Regulating function of teachers' professional titles

Table 7 shows that H6 is supported. Model 1 includes independent variables, and on this basis, a moderating variable (teacher's title) was added in Model 2. In Model

3, an interaction item (product item of independent variable and moderating variable) was also added. The main reason for the additions is that the higher the teacher title, the richer the teaching experience and the higher the teaching level. From the results, the product terms of independent and moderating variables are significant ($T=2.322$, $P=0.021 < 0.05$). Thus, the effect of role-playing teaching practice on the utilization of learning resources significantly varies at different levels of teachers' professional titles. For this practice, teachers with higher titles need more time to study teaching methods, explore the content, and design the process. They pay greater attention to learners' mentality changes and endogenous power, allowing the learning process such that students can make full use of the vast available resources.

Table 7. Regulating function of teachers' titles

	Model 1	Model 2	Model 3
Constant	4.181** (102.531)	4.181** (102.273)	4.115** (83.159)
Y	0.496** (9.477)	0.511** (6.851)	0.530** (7.145)
X	-	-0.019 (-0.285)	0.030 (0.449)
X*M	-	-	0.134* (2.322)
Sample size	185	185	185
R ²	0.329	0.33	0.349
Adjusted R ²	0.326	0.322	0.338
F value	F (1,183) =89.823, p=0.000	F (2,182) =44.726, p=0.000	F (3,181) =32.334, p=0.000
ΔR ²	0.329	0	0.019
ΔF value	F (1,183) =89.823, p=0.000	F (1,182) =0.081, p=0.776	F (1,181) =5.391, p=0.021

* $p < 0.05$ ** $p < 0.01$ t value in parentheses

4.5 Differences in the utilization of learning resources

Table 8 shows that non-parametric test was used to study gender differences in learners' self-planning, self-monitoring, self-regulation, and self-evaluation. From the results, student gender is composed of two groups (1.0 and 2.0), and thus Mann Whitney test statistics were used for analysis. Significant differences in self-planning, self-monitoring, self-regulation, and self-evaluation are observed among different gender samples ($P < 0.05$). Overall, the utilization of learning resources of girls was significantly higher than that of boys. The main reason is that the subjects of the survey are English majors of science and technology with a high proportion of female students. A large number of studies also show that female students believe that academic performance depends on hard work, and thus they emphasize more on the rewards of effort, which may also be the reason that many female students prefer liberal arts. At the same time, given the major settings of higher education in China, female students occupy a large proportion in English and other liberal arts majors. As a whole, female students have strong learning motivation and self-control, and make better use of professional learning resources than male students.

Table 8. Gender differences in the utilization of learning resources

	Gender median M(P25,P75)		Mann Whitney Test statistics U port	Mann Whitney Test statistics z port	p
	Female students(n=114)	Male students(n=71)			
Self-planning	4.250(4.0,5.0)	4.000(3.5,4.8)	3205.5	-2.409	0.016*
Self-monitoring	4.400(4.0,4.8)	4.000(3.2,4.6)	3136	-2.586	0.010**
Self-regulation	4.700(4.0,5.0)	4.000(3.0,5.0)	3262.5	-2.298	0.022*
Self-evaluation	4.500(4.0,5.0)	4.250(3.3,5.0)	3319	-2.102	0.036*

* $p < 0.05$ ** $p < 0.01$

Table 9 shows no significant difference in grade utilization of learning resources. The main reason is that, from their perspective, teachers of different grades have high cultural levels and are familiar with how to adopt role-playing methods in online teaching. Therefore, varying teachers' teaching abilities cause no differences in learners' use of learning resources. At the same time, all departments of English for Science and Technology have adopted the pilot method to carry out role-playing teaching in all grades. Therefore, all students actively participate in role-playing teaching method and show no obvious difference in learning resource utilization.

Table 9. Utilization of learning resources among majors and grades

Factor	Statistics					F	p
	1.0(n=24)	2.0(n=49)	3.0(n=58)	4.0(n=26)	5.0(n=28)		
Major	4.27±0.77	4.30±0.84	4.13±0.90	4.49±0.55	4.17±0.88	1.008	0.405
Grade	1.0(n=22)	2.0(n=59)	3.0(n=70)	4.0(n=34)		0.843	0.472
	4.28±1.00	4.29±0.79	4.09±0.99	4.32±0.71			

Table 10 shows that using one-way ANOVA to study the differences of familiarity in learners' self-planning, self-monitoring, self-regulation, and self-evaluation, the length of familiarity with role-playing teaching methods causes significant differences in the four aspects of learning resource utilization. The possible reason is that learners and teachers do not implement face-to-face interaction due to time and space segregation of the online teaching way. The greater familiarity with and deeper understanding role-playing teaching practice allow learners to have a more comprehensive knowledge of what they wish to do. According to their assigned roles, learners can become more familiar with suitable teaching role-playing practices. In the preparation of group role-playing, various learning resources and further obtain knowledge, advice, and experience can be fully used through interaction with peers and teachers to promote the mining and improvement of our own wisdom and tacit knowledge.

Table 10. Length of familiarity with role-playing teaching methods and learning resource utilization

	Familiarity time length of role-playing teaching methods (mean soil± standard deviation)						F	p
	1.0 (n=3)	2.0 (n=16)	3.0 (n=44)	4.0 (n=55)	5.0 (n=66)	6.0 (n=1)		
Self-planning	4.20±0.35	3.90±1.17	4.33±0.71	3.88±0.90	4.20±0.61	2.60	2.781	0.019*
Self-monitoring	3.67±0.58	3.69±1.35	4.41±0.79	3.82±1.12	4.14±0.88	3.00	2.646	0.025*
Self-regulation	4.00±0.00	3.88±1.02	4.20±0.93	3.69±1.17	4.08±0.86	2.00	2.341	0.043*
Self-evaluation	4.33±0.58	3.88±1.15	4.32±0.74	3.87±1.12	4.18±0.89	2.00	2.343	0.043*

* $p < 0.05$ ** $p < 0.01$ t value in parentheses

5 Conclusions

Educational informatization is widely and deeply applied all over the world, promoting the transformation of education from traditional to modern. The networking, personalization, and sharing brought by educational informatization allow online learning to pay more attention to learners on how to efficiently use learning resources and improve performance. Role-playing teaching practice can help students fully use online learning resources, stimulate their endogenous learning motivation, and enhance their learning interest. Based on three universities of English majors for Science and Technology in Xi'an, Shaanxi Province in China as the research subject, the online role-playing teaching practice and students' planning, monitoring, adjusting, and evaluation of learning resource utilization are analyzed. In addition, the influences of gender, grade, professional title, and role-playing teaching familiarity are examined. The findings show that the reliability coefficient of the questionnaire is 0.927, indicating good convergence and discriminant validities.

Role-playing teaching practice has significant influence on the learners' self-planning, self-monitoring, self-regulation, and self-evaluation of learning resource utilization in online education. In this method, self-efficacy plays a mediating role and the teachers' professional title plays a moderating role, both of which can effectively improve learners' utilization of learning resources. Finally, gender and length of familiarity with role-playing teaching methods cause significant differences in the utilization of learning resources.

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