

Application of Visual Simulation Technology in College English Teaching

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Bing-jun Ma

Fuyang Normal College, Fuyang, China

Abstract—To solve the problem of low utilization efficiency of English teaching resources and students' learning quality is not high. A complete English teaching system based on visual simulation technology was developed to solve the problems of English teaching and cross culture. Teachers' development of various types of teaching methods, to improve the students' scores has significant help. Visual simulation technology can change the traditional teaching mode, stimulate students' interest in learning and improve the quality of English teaching.

Index Terms—visual simulation technology, English teaching practice, learning experience and fun

I. INTRODUCTION

Simulation is a rising subject recently, along with the methods and application techniques of simulation researching deeply, with digital computer the simulation to practice system or imaginary system has been more and more recognized. Because a lot of high and new techniques have progressed, as net technique, graphics and image technique, multimedia, software engineering, information processing and auto-control etc., these have expedited the progressing step of simulation technique. With the application of visual system increasingly abroad, people demand the simulation fidelity higher of visual system and long for the visual environment even more matching case nature[1].

Due to the poor interaction of traditional English teaching method, the efficiency of the usage of English teaching resources is low. In order to solve the problem, visual simulation thinking should be used to reform the traditional English teaching method [2-3].

II. METHOD AND ALGORITHM

Regarding students' personality cultivation in College English education, we focus on the guidance of students' cultural attitude and translation ethics in cross-cultural context[4]. Therefore, we lead students to learn to understand and tolerate, to respect the foreign culture, to spread the quintessence of Chinese culture in English, to reconcile the merits of Chinese and Western culture, and to maintain the national character of culture. Broadly speaking, every cross-cultural communicator may be called upon to serve as a translator. Therefore, it's necessary for College English education to help students clarify the responsibility of a translator and hold to the ethics of a translator[5-7].

Visual simulation technology is used to solve the situation of English teaching and cross cultural issues. Figure 1 shows the virtual scene when the students discuss the

daily life in the USA with a gentleman called Von and a lady named Nyaasu[8].



Figure 1. The virtual scene when the students discuss the daily life in the USA with a gentleman called Von and a lady named Nyaasu

According to the visual theory, the calculating formula can be obtained in equation (1)-(3).

$$g(x, \omega) = \frac{1}{(2\pi)^3} \int g(k, \omega) \exp(-ik \cdot x) dk \quad (1)$$

$$g(k, \omega) = \begin{vmatrix} G_{ik}(k, \omega) & \gamma_i(k, \omega) \\ \gamma_k^T(k, \omega) & g(k, \omega) \end{vmatrix} \quad (2)$$

$$G_{ik} = (\Lambda_{ik} + \frac{1}{\lambda} h_i h_k^T)^{-1}, \quad g = -(\lambda + h_i^T \Lambda_{ij}^{-1} h_j)^{-1} \gamma_i = \frac{1}{\lambda} h_k^T G_{ki}, \quad (3)$$

To calculate the parameters in above equations, then we have:

$$\Lambda_{ik}(k, \omega) = k_j C_{ijkl}^0 k_k - \rho_0 \omega^2 \delta_{il}, \quad h_i(k) = e_{kil}^0 k_k k_l, \quad h_i^T = e_{ikl}^{0T} k_i k_k, \quad \lambda(k) = \eta_{ik}^0 k_i k_k \quad (4)$$

$$\frac{1}{2\pi} \int_{-\infty}^{\infty} e^{-ik_3 x_3'} dx_3' = \delta(k_3) \quad (5)$$

$$s(X \rightarrow Y) = \frac{\sigma(X \cup Y)}{N} \quad (6)$$

$$c(X \rightarrow Y) = \frac{\sigma(X \cup Y)}{\sigma(X)} \quad (7)$$

The formula generates labels for each file block.

$$\text{for}(j = 0; j \leq n - 1; j ++); \quad (8)$$

$$\{W_j = r * (j + 1); T_i \quad (9)$$

$$= [h(W_j) * m_j]^c \text{ mod } N};$$

$$\text{Output}(T_0, T_2, \dots, T_{n-1}); \quad (10)$$

And local fractional integral of $f(x)$ defined by Eq.9.

$$\begin{aligned} {}_a I_b^{(\alpha)} f(t) &= \frac{1}{\Gamma(1 + \alpha)} \int_a^b f(t)(dt)^\alpha \\ &= \frac{1}{\Gamma(1 + \alpha)} \lim_{\Delta t \rightarrow 0} \sum_{j=0}^{j=N-1} f(t_j)(\Delta t_j)^\alpha \end{aligned} \quad (11)$$

Its local fractional Hilbert transform, denoted by $f_x^{H,\alpha}(x)$ is defined by

$$\begin{aligned} H_\alpha \{f(t)\} &= \hat{f}_H^\alpha(x) \\ &= \frac{1}{\Gamma(1 + \alpha)} \int_R \frac{f(t)}{(t - x)^\alpha} (dt)^\alpha \end{aligned} \quad (12)$$

Where x is real and the integral is treated as a Cauchy principal value, that is,

$$\begin{aligned} &\frac{1}{\Gamma(1 + \alpha)} \int_R \frac{f(t)}{(t - x)^\alpha} (dt)^\alpha \\ &= \lim_{\epsilon \rightarrow 0^+} \left[\frac{1}{\Gamma(1 + \alpha)} \int_{-\infty}^{x-\epsilon} \frac{f(t)}{(t - x)^\alpha} (dt)^\alpha + \right. \\ &\quad \left. \frac{1}{\Gamma(1 + \alpha)} \int_{x+\epsilon}^{\infty} \frac{f(t)}{(t - x)^\alpha} (dt)^\alpha \right] \end{aligned} \quad (13)$$

Knowledge acquiring, thinking training and personality cultivation are not isolated from one another. They run through College English education harmoniously and complementarily. Knowledge acquiring makes students knowledgeable, and the gradual development of thinking and personality leads students to be wiser. The wisdom development undoubtedly prompts students to really master English. Therefore, the education guiding students' wisdom development can not only make students wiser, solve the puzzles of the teacher, but also better the current time-consuming and inefficient College English education. If we can be clearly aware of the significance of the College English Education, it will move from a poor situation towards a rich one, from difficulty to freedom, and play an indispensable role in higher education and the cultivation of international talents.

From the model and the algorithm discussed above, we can develop a whole system for English teaching system



Figure 2. The virtual scene of a news platform



Figure 3. The virtual scene of a news platform after adding a virtual character in the scene

based on the visual simulation technology. First, assume that the virtual scene of intercultural communication is the studio. The student is the host of the news program. The need of the communication is to interview an official of the government department of the environment, and talk on the question of the greenhouse effect. We use virtual technology to component the scene of a news platform which is shown in the following figure 2. Then we add a virtual character in the scene, that is, the host and government official that is shown in the following figure 3. Finally, we add the standard text dialog. A system is completed and the student can practice in the simulation scene based on the system.

III. EXPERIMENT RESULT

From the data in Table 1, there are 6 levels in the 9 types of universities, the best scores are mainly witnessed the best universities of the first batch undergraduate universities. Then the best of the second batch universities and the middle ones of the second batch universities followed as the second level. And the middle ones of the second batch universities and the colleges are belongs to the third level. The worst ones of the first batch universities are the forth level. The middle ones of the colleges and the worst of the second batch universities are the level five, and the rest are the level six. Moreover, a qualified College English teacher has the ability as well as the responsibility to lead students' emotion, attitude and values as a whole. Students' personality cultivation is inseparable from the teacher's wise guidance, so it needs the teacher to develop multiple types of information, create a humanistic and harmonious environment, and improve his/her own wisdom.

The college English test mainly reflects the eight sub-items, including a big question, total 8, the specific content of the test was illustrated by Fig. (4) and Table 2. There are 9 levels of the 206 universities, and the result of the sub-items was as followed Table 3.

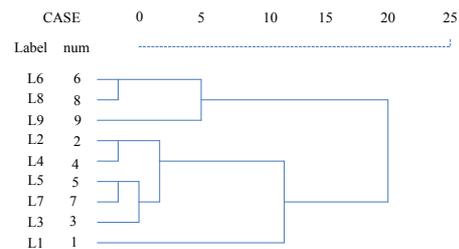


Figure 4. The result of the clustering analysis on the section scores of English.

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TABLE I.
THE RESULT OF THE ORIGINAL 9 TYPES OF UNIVERSITIES

Original 9 types	L1	L2	L3	L4	L5	L6	L7	L8	L9
Number of the universities	15	38	28	6	12	5	30	49	23
Average score	118.67	103.49	90.78	108.36	99.06	82.53	95.86	84.84	68.81
Rate of the scores	0.79	0.69	0.61	0.72	0.66	0.55	0.64	0.57	0.46

TABLE II.
THE EIGHT TEST ITEM

Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
0.75	0.69	0.58	0.80	0.63	0.73	0.61	0.45

TABLE III.
THE 9 LEVELS OF SUB-ITEMS

Type of the university <i>category</i>	No. of the sub-items								
	1	2	3	4	5	6	7	8	Total
1st level	0.94	0.91	0.78	0.98	0.91	0.88	0.88	0.63	0.84
2nd level	0.84	0.78	0.66	0.90	0.74	0.85	0.75	0.62	0.74
3rd level	0.86	0.81	0.68	0.92	0.77	0.84	0.75	0.50	0.73
4th level	0.81	0.75	0.61	0.89	0.70	0.82	0.70	0.41	0.67
5th level	0.78	0.72	0.60	0.83	0.67	0.73	0.65	0.53	0.66
6th level	0.76	0.68	0.57	0.82	0.62	0.76	0.60	0.38	0.62
7th level	0.71	0.64	0.53	0.75	0.58	0.71	0.57	0.47	0.59
8th level	0.65	0.58	0.49	0.68	0.50	0.62	0.47	0.37	0.52
9th level	0.57	0.50	0.43	0.57	0.39	0.50	0.36	0.28	0.44

TABLE IV.
SCHOOL CLUSTER SURVEY DATA

University types	The original 9 types								
	L1%	L2%	L3%	4%	5%	L6%	L7%	L8%	L9%
One	53.3	0	0	0	0	0	0	0	0
Two	0	5.3	0	50	8.33	0	6.7	0	0
Three	33.3	23.7	0	16.7	0	0	0	0	0
Four	0	47.7	7.15	0	0	0	3.3	0	0
Five	6.7	2.6	0	33.3	83.34	0	43.3	0	0
Six	6.7	21.1	46.4	0	0	0	6.7	14.3	0
Seven	0	0	21.4	0	8.33	40	36.7	49.0	0
Eight	0	0	17.9	0	0	40	3.3	30.6	34.8
Nine	0	0	7.15	0	0	20	0	6.1	65.2
Total	100	100	100	100	100	100	100	100	100

IV. DISCUSSION

As we can be seen from the above data, in the first stage of a total number of eight schools, although this stage are placed at the front of the undergraduate group, in all the universities of the second batch of universities, and includes a middle ones of the first batch universities, Then the best of the second batch universities and the middle ones of the second batch universities followed as the second level. And the middle ones of the second batch universities and the colleges are belongs to the third level, the number of this level is 15, individually is 5 and 9. However, there are totally 21 of the fourth level of universities. This level stage is a mostly middle reaches of the schools, the number is 18. Among the rest four distributions of levels of universities, the seventh is more complicated, it

has a different analogy among each level. There are 27 universities in level fifth, mainly are the middle one of the second batch universities and best ones of the colleges, number is 10 and 13. And there are 31 universities in the sixth level, which involves a number of various categories of undergraduate, and also the first 2 categories of the colleges, the number was 1, 8, 13, 2 and 7. With regard to the seventh and eighth level, mainly are colleges, a total number of institutions in the seventh level is 44, while the former two categories, respectively, colleges occupy 11 and 24. Among eighth level universities involved a total of 31, which are mainly from the middle and lower class of the colleges, number is 15 and 8 respectively.

As can be seen from Table 4, the process of a university ranked in the forefront of the school during the school clustering mainly distributed over the third level, and this

proportion has been reached 86.6%, however, the middle ones during clustering process mainly distributed between the second level to the sixth grade in school and nearly half of these universities are in the fourth level. The universities came in a thick cluster of schools in the process mainly distributed between the sixth level to ninth level, and in this part, there 85.7 percent were divided to the sixth to eighth level of universities. However, there are 50 percent forefront of the universities can be included in the second level during the clustering process, and the one third of these universities are placed as seventh level. The middle ones are mainly distributed in the fifth level, while the rest of the schools were all in the second to the seventh level. Among which there are schools, mainly are in between the sixth to ninth grade, and proportions of the fifth level and seventh level has reached 79.69 percent, but the rest universities are mainly distributed in the last two levels, in which the last level accounted for two-thirds of the total.

V. CONCLUSION

Aiming at improving the learning experience and fun in English teaching practice, visual simulation technology is applied in this paper. For English learning, merely language teaching is not enough, nor is merely language learning, and successful English should cultivate students' intercultural communication ability and integrate the social culture factors of a language into the language teaching for students. Successful English teaching is an important guarantee of successful intercultural communication, but in real life, there are many cases of communication misunderstanding and failure which are caused by the disconnection between language teaching and culture teaching. Therefore, it is necessary to enhance cultural infiltration in English teaching. Combining with the characteristic of visual simulation, it is proved that the visual simulation technology can change the traditional teaching

mode, stimulate students' interest in learning and improve the quality of English teaching. The experiment results of this paper have a reference value for the application of visual simulation technology in the field of education.

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AUTHOR

Bing-jun Ma is with Foreign Languages School of Fuyang Normal College, Fuyang, China (ma-bingjun@chinauniedu.com).

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