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# Human Harmony: A Fresh Perspective, a New Approach

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**Abstract:** This is an attempt at taking a macroscopic holistic and evolutionary psychological perspective to pin-point, in a nut-shell, the causes and effects of the disharmony that infests Humanity today. And to devise a possible remedial course of action, a pragmatic approach, that can effectively reduce the causes of such disharmony within a reasonable span of time. Whatever exist, in the human *external* environment, have their source causes in the *internal* psychic space. So addressing the relevant *internal* issues may alleviate the *external* disharmony. Millennia old '*partial perceptions*' won't fade away overnight. But, the solution, to this enormous deep-rooted problem, need not be complicated. All we require is an effective strategy to counter the divisive disharmony and a sincere will to persevere and sustain the efforts over a considerable period of time. Consciously or subconsciously, humanity has been inching towards global harmonisation. But, the path has been hap-hazard due to the want of a holistic vision for the future. We can do much better if we take the initiative towards the inclusive harmonisation of all. And it's surely worth making the effort. For the fruits of harmony shall be a huge boon to us, in every aspect of our Human existence.

**Key words:** Partial perception, fractional identity, disharmony, remedial approach, human harmony

## Introduction

This article is intended to go a bit into the details of the dynamics of Human Harmony. It is inspired by and richly draws from the recently published Science Fiction book, '*The extra-terrestrial delivery*', which not only goes into the evolutionary past and the happening present but also evokes a vision for the future of a race (Das, 2016). This is more like a search than research, culmination of years' of contemplation. The views expressed here are in my individual capacity and not that of any government, organisation or body.

### 1. About human harmony

The ideal of "Human Harmony" is anything but new. Perhaps, it has accompanied humanity since the beginning of civilisation. For an example, in the ancient times itself, sages uttered the Sanskrit words "VasudhaEva Kutumbakam" loosely meaning, the world is like a family; thus indicating towards a global sisterhood/brotherhood.

By the second half of the last century, it was known that not only all human beings but all living creatures on our planet Earth are genetically related (e. g., Theobald, 2010; Wigler, 2016; Pelech, 2016).

### 2. Main content: Discussion, illustration and a possible approach to harmony

#### 2.1 Cause/s of disharmony

Even so, more than one and a half decades into the twenty-first century, we, humans, still find ourselves as divided as we are. We need to ask questions like how and why the race gets fragmented, particularly psychologically, and then try to open-mindedly seek answers to these questions and endeavour to find pragmatic solutions.

Every human baby is born with infinite potentials and possibilities. Then it is given a name. In certain culture/s, the baby is named even before it is born. We can not do without a name and so, are bound by its inevitable consequences. This is just to show how the omni-potent human psyche gets fractionalised. Potentially, the baby could be named anything, from Robert, Rahim, Raam to Ringjhing. But, the moment any one of these names is ascribed on the baby, it is instantaneously fractionalised by the limiting connotations attached to the name.

Similarly, ever since our childhood, we, rather credulously, receive one fractional branding after another from our *external* world, in the name of geographical locale, physical feature, colour of skin, language, tradition, convention, faith, nation and so on. With each such branding, our psychologies are reduced to tinier entities that progressively divert our focus from the existence of the *Whole*, that is, all of Humanity.

This happens partly because we imbibe the past and present '*partial perceptions*' from our immediate and extended milieu since an early, tender and impressionable age, but more so because we continue to exist within these

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**Author:** Sudipta Das, thinker and author, grounded to the realities. His debut book, '*The Asylum Dweller's Diary*', was published in 2011 from New York. His other Science Fiction books with philosophical flavours, '*Back to Planet Hoola*'(2013) and '*The Extra-terrestrial Delivery*'(2016), are also centred and detailed around the cause and the ideal of Harmony.

An Indian, the author has a Science Degree with Honours in Physics from the University of Calcutta.

fractional systems, and therefore lack a *'holistic perspective'*.

## 2.2 An illustrative model of the on-going natural harmonisation

In order to understand the root causes of the *'fractional identities'* that we carry on inadvertently, let's have an outsider's view at this simplified model, an illustration, about an alien Hoo race in an alien setting on an alien planet called Hoola millions of light years away from Earth, an excerpt from the science fiction book *'The extra-terrestrial delivery'*, which is oriented around the central theme of Harmony (Das, 2016):

[...In the physical universe, every bit of matter attracts others by the pull of Gravity. It is this all-pervading Gravity that not only keeps the heavenly bodies in their respective relative positions, but at times, brings dispersed matter closer and unites them into a larger entity. Thus faint nebular gas molecules spread over vast expanses of space, concentrate over billions of years. The molecules collide, swirl and gather into increasingly larger bodies. Eventually, a huge mass of critical size is attained. Then, this huge mass is ignited by the tremendous pressure and heat at its central core, caused again by its own Gravity. Thus is born a star, luminous by its own light.

Likewise, ever since the evolutionary advent of the Hoos on the planet Hoola, they have been gathering into increasingly larger groups, from *individual* existence towards the *Whole*, by the power of the all-pervading forces of nature of different kinds. Of course, economics and technological advancement played their parts too.

First was the isolated *individual* scavenging Hoo struggling to survive against the forces of nature. After the Hoos had gained some knowledge and control over the elements, *family* came into being. After they learnt agriculture, settlement at a given place became possible. *Families* gathered into early rural communities. Then *villages* developed into *towns*. Eventually, economy and security of greater numbers gave rise to *kingdoms*. Kingdoms evolved into nationhoods, the present phase through which the Hoo race is passing. Often this larger picture of the ongoing socio-economic political ascent of the race remains unnoticed. It is taken for granted as if the *nations*, as great and as functional as they seem to be, will remain forever.

But *anything that has a beginning and is subject to change must also have an end*. This seems to be an unfailing rule of nature. As the various *nationalities* cherish their individual identities, their interdependence is coming to the fore, in degrees. Already groups of *nations* are associating into regional and pandemic collectives of different kinds, based on varied compulsions and intentions. Already there is an indication towards the union of the *Whole*.

Now, coming to the evolution of the Hoos' internal

psychic space, a similar but subtler move, from identification of the self with the *individual* towards that with the *entire*, may be observed. This move from the *unitary* towards the *universal* is guided by, at times manifest but often subtle, power of all-pervading Love. But the impressions of the past and the present partial existences persist, and psychologically render the race retrograde. Today an average Hoo consciousness simultaneously carries the impressions of being an individual, a family, a community, a village, a city, a nation as well as a faint awareness of the Whole. Interestingly, often the identification of the self seems to be the strongest with the smallest entity, the individual, and gradually weakens as the size of the group, with which one attaches the self, increases...]

## 2.3 Consequences of disharmony: Effects

Coming back to Earth, should humanity continue to carry on the past and present *'partial perceptions'* and thus, incessantly continue to bear the ill effects thereof? *'Partial perceptions'* lead to *'fractional identities'*, which, in turn, gives rise to psychologically harmful and externally destructive *'intolerance'*. A *'fractional identity'*, to which an individual is psychologically attached, makes the individual consider the people with the same *'fractional identity'* as her/his own people belonging to her/his *'In-group'*. Consequently, the individual perceives all the other peoples who do not share her/his *'fractional identity'* as outside her/his own group, i.e. belonging to her/his *'Out-group'*. Thus, the *'fractional identities'*, through the development of this *'We versus Others'* feelings, fragment the Human race into myriad fractions, which are anything but the *Whole*.

Even though we may not always realise it, the impressions of the *'fractional identities'* reach and remain deep in our subconscious psychological levels, to which we have little access and almost no control. But these subconscious impressions of the *'fractional identities'*, nevertheless, continue to mould, shape and control our thoughts, words and actions.

*'Fractional identities'* inevitably led to most of the feuds, battles, displacement of peoples and genocides that Humanity has witnessed till date. We have already fought two World Wars; a third has the potential to nuke the planet to annihilation. Are we, as intelligent living beings, not capable of taking the reign of our destiny in our own hands?

## 2.4 A remedial approach to accelerated harmonisation

With almost nothing to counter the fission effects of our ascribed and/or imbibed *'fractional identities'*, we need to establish a viable system, a new stream of thought and education that may be named "Human Harmony", that simplistically puts forth the simple reality of the existence of the entire Human race as a *Whole*, on the planet Earth, which we may call our home, the only home we have so far till date.

However, the focus may be on the all-encompassing Human Harmony itself, and not merely on the name. Otherwise, as deceptive as a name can be, "Human Harmony" may end up representing a group with certain limited ideas, which will be anything but the *Whole*. The key is to remain connected to the *Entire*, and to highlight and showcase the all-encompassing *Whole*, accommodating all the component *diversities* therein; and to constantly remind ourselves of our collective *common destiny*.

Another very important thing to remember is that, *external* cosmetic adjustments may be good for adaptations and they may even seem to be functional in resolving some of the *external* symptomatic disorders caused by disharmony; but such *external* cosmetic adjustments can hardly cure the real disease within, the *internal* psychological fragmentation of the Human race caused by the '*fractional identities*', which are, again, the outcome of the '*partial perceptions*'.

Let meritorious scholars as well as people from all backgrounds come forward to engross themselves in the meditation and realisation of the *Whole*. Let them realise the significance of each individual or group being an apparently tiny but unique and potentially enormous wave, an essential part and parcel, of the ocean of Humanity. Continued learning in any field of knowledge, sooner or later, leads to the expansion of the consciousness. So, *through Philosophy, History, Economics and Science, through all knowledge and wisdom, humanity may eventually arrive at the awareness of its own Oneness* (Das, 2015).

Then, having realised the *Whole*, the harmonisers may reach out availing themselves of all possible avenues, like post-modern missionaries of a new kind, and share their expanded consciousness with the world. If we start this process now, Humanity may reach harmony as early as in three generations' time, i. e. about seventy-five years. It is said to take three generations' time for such a change to effect.

In this regard, let us draw another reference from the book '*The extra-terrestrial delivery*' (Das, 2016). Kit, the protagonist in the Fiction, calls upon his fellow alien Hoos, ["*World Uniters*, individuals and groups of all kinds, who have ever felt yourselves to be, One with the *Universal Soul*, that is, one with the *Whole* .

- Capable of manifesting that *Universal Soul* in every aspect of this external world
- Not fragmented by the narrowed down limited notion of the *Self* being the body, or any other form like gender, class, community, village, town or nation
- Freer than those who are compelled to relinquish the freedom of their *Souls*, to give vent to their zeal towards

coveted positions of power of social, political or economic importance

- The ones who have overcome the basic selfish desire to rule and the lust for power, and instead aspire for excellence and service to all

- Beholders of the *vision of unity*, and therefore bringers of the *internal psychic union* of the race "unite.

"Because your unity shall mark the first layer. And augment, reinforce, complement and supplement those forces of unity, which shall, sooner or later, lead the race towards that destiny of a more perfected global existence. These unifying forces, covertly or overtly, subdued or manifested, have always been there and shall ever be. Therefore, we are bound to reach that destiny. It is only a matter of time. But is it not better sooner than later? Because with the alleviation of each difference, the race is blessed and bestowed with such wonderful benefits, like peace and harmony, which forge the race light-years ahead in the path of our ascent and our freedom.

"If you cannot accept each other as you are, surpassing and transcending the differences among yourselves, then what can be hoped of those who are yet to feel the need and realise the wisdom to unite.

"Therefore, hey *World Uniters*, in spite of your own external differences, be bold and have faith in your inner call. First, unite yourselves. Even if you find yourself fewer in number now, or for that matter, if you are presently compelled to walk the path alone, do not be afraid. Do not be hesitant and do not be overwhelmed by the presently stereotyped majority. For in your heart and in your head, you hold the light that shall usher in the glorious future that awaits the race."

After a brief pause, Kit continued, "There are agencies and faculties which have been at work for this unification, as have been the dark and negative divisive forces. Significantly, but quite naturally, even these faculties of unification have grown distinctions fuelled mainly by their respective unique peculiarities, the time and place of their respective origins, and the courses of their respective developments.

"The challenge that lies before each of these unifying faculties is to preserve the fruits of its own development on the one hand, while opening its heart to be receptive and accommodative to those of the others on the other. *Organic* growth from within any of these agencies may be painstakingly slow and, sooner or later, bound to reach a saturation level well before realising the ultimate goal of *unification of all*. It may be the right time to expand *inorganically*, through *Collaboration*.

"A singular set of generalised rules may prove defunct. A singular world order may be an unnecessary ideology. It may prove to be a futile intellectual exercise, relativity of

Truth itself being dynamic and susceptible to change with respect to time, place and context.

“The knowledge, understanding and realisation of the Truth may be cause enough for the unification. The Truth is not very hard to find. In fact, it is already known. No matter in how many different ways we have been programmed ever since our births, to identify ourselves in the name of tradition, convention and even culture, the Truth remains that we all are, after all, one species, one Hoo race. The sooner we come to terms with this inescapable and basic reality of our existence on this planet, which we may call our home, the better.

“What is required is to ensure to the new-comers and to those who are yet to arrive, yet to be born, the *freedom* from the ‘*bondage of the ascriptions*’. The rest of us, in some way or the other, consciously or more often, subconsciously, have already been soiled by these ascriptions. Let us not pass our contamination unto the new-comers without giving them a chance to think for themselves. What right do we have to such perpetration?

“Let us struggle against *forced branding*. Let us allow the newcomers to acquire knowledge and to grow up in an ambiance free from forced dogmas. After they grow up, they may choose which path they want to follow, irrespective of their parentage.

“Most importantly, let us, all the Hoos, wake up to our universal existence as a Whole.”

Kit’s delivery proved to be an eye-opener for the audience. While they quietly soaked up the rich wisdom, Kit remained silent for a while. Then he went even further and enumerated the possible steps for the *World Unifiers* to unite. He suggested, “Let there be *interactions*.”

“Firstly, through *Communication*, we may open up the door to mutual understanding and to mutual appreciation. This will prepare us for the next step, *Cooperation*. Through *Cooperation* shall grow goodwill and friendship. Then, it will have already become easy for friends to *Collaborate*, which is the third step. Thus, *World Unifiers* augment the ever accumulating forces of unity.”...]

A wonderful example of international collaboration is Sino-Aussie Unique Collaboration Centre for Education Study and Service (SUCCESS). This Sino-Australian initiative apparently transcends all the socio-cultural, political, economic and other diversities, and inclusively accommodates the same, through comparative studies and the resultant mutual understanding and appreciation. Endeavours like this effect people to people, culture to culture contact and exchange, enriching and expanding the consciousness of the participants, an enormously significant step towards global harmony.

Apparently, there are many other sub-national, national,

international, public, non-governmental as well as individual, some well-known, like the United Nations, and perhaps many relatively unknown, entities who, in their respective unique ways, envisage the vision of a Harmonised World. In order to accentuate the harmonising forces and to accelerate the harmonising process, each of these harmonising entities, individuals and groups of various kinds, may go beyond its own limiting finiteness. We require a global open and inclusive platform where every harmoniser is free to add to the cause of Human Harmony.

Of course, it may not be that everybody is waiting to lap up the vision of a Harmonised World. Some people, who are psychologically expanded and open to new ideas, will. Some others, perhaps bogged down with the worldly affairs of their day to day lives, may show indifference. While yet others, the no-changers and those whose vested interests may be adversely affected by Harmony, may even oppose the move. We may start with the people who are already expanded in their outlook or are willing to expand their consciousness to encompass the *Whole* of Humanity. Then, taking one step at a time, we may move ahead from there.

### 3. Conclusion

#### 3.1 Some of the possible fruits of harmony

It’s definitely worth the toil to harmonise, because the benefits of a Harmonised World are not very difficult to conceive. Here are just a few.

a. A Harmonised World will not only bring peace and prosperity to the race, but also require reduced means for war. Even a mere 10% reduction in the global annual military expenditure of about 1.75 trillion USD (e. g., Shah, 2013; Perlo-Freeman, Fleurant, Wezeman, & Wezeman, 2016) may leave surplus resources of about 175 billion USD per year, enough to alleviate extreme poverty on Earth (e. g., Riley, 2014; Anielski, 2016). So long as poverty remains, there can be no peace on the Planet.

b. In a Harmonised World, the terrorist will find little place to hide and operate from, thus further enhancing peace.

c. When, at least a majority of the seven billion strong Human race is psychologically expanded and inclined towards the *Whole*, the deterioration of the global environment will be easier to tame with the open-minded global initiatives.

d. Harmonisation can effectively reduce the risk of that third major war, which can potentially nuke the world into oblivion.

e. Improved international relations will further promote trade, which is always good for all the parties.

f. A Harmonised World would be immensely conducive to a psychologically healthy human existence.

Presently, all the above benefits and many more are not

accruing to us, Humanity, mainly due to the reason that we continue to be impaired psychologically by the '*partial perceptions*', which we have inherited inadvertently from the unavoidable past. But we can surely try and work in the present to rid our consciousness of these narrow '*partial perceptions*', and thus, expand towards a much more perfected Global Human Harmony, in the not so distant future. So, let's reiterate Kit's words- *Hey World Unites, individuals and groups of all kinds, unite*. The sooner we do, the better for us.

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# Prevalence of Omphalitis in New Born: A Retrospective Study in St. Gregory Hospital, Budunburam, Ghana

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(researcher at WHO and West End University College, Ghana)

**Abstract:** There is an increased risk of neonatal infection arising through exposure of the umbilical cord to invasive pathogen where hygienic cord care practices are difficult to achieve. Omphalitis is common in developing countries, although, information on its prevalence in Ghana is limited. The aim of the present study is to determine the prevalence of omphalitis in St. Gregory Catholic Hospital, Budunburam. A descriptive retrospective survey method was used. SPSS (version 17) was used in data analysis. The studied population was 136 neonates of which male are 66(49%) and female (51%). The prevalence of omphalitis is 99(73%) with a mean age of 6 days. Male to female proportion with omphalitis are 47% and 51% respectively. Death occurred in 3(3%) of the neonates with omphalitis. Highest 21(22%) number of admission and omphalitis cases was recorded in March, 2015. High prevalence of omphalitis (73%) was recorded among studied group. No significant difference in risk for omphalitis among female and male new-borns. The mortality rate is low if case is reported early and treatment is initiated. Health workers at the facility should increase health education and demonstrations on cord care during antenatal clinic and post-natal care.

**Key words:** Retrospective, Prevalence, Omphalitis, New-born, Neonate, Ghana

## Introduction

Omphalitis is an infection of the umbilicus – in particular, the umbilical stump in the new born (Bugaje, Ameh, McHoney, & Lakhoo, 2008). Omphalitis can also be defined as either pus discharge with erythema of the abdominal skin or severe redness greater than 2cm extension from the umbilical stump with or without pus (Mullany, Darmstadt, Katz, & Tleish, 2006; Al-Hiali, Al-Mawla, Sa'eed, & Yusuf, 2009). Each year, there are approximately 3.3 million neonatal deaths in the first 28 days, worldwide (Goldenberg, McClure, & Saleen, 2013). Infection accounts for approximately 36 percent of neonatal mortality worldwide (Lawn, Cousens, & Zupan, 2005), and neonatal sepsis which may start from the umbilical cord and later become systemic (WHO, 1998).

Severe cord sepsis is one of the top three causes of new born death worldwide, causing about 13% of all neonatal deaths (WHO, 2013; UNICEF, 2012). About 0.521 million (6%) deaths occurred in five countries of India, Nigeria, Democratic Republic of Congo, Pakistan and China (Black, Morris & Bruce, 2008). Omphalitis is common in developing countries, with a prevalence of 6.18% (Sawardekar, 2004) while is uncommon in developed countries, with an incidence of 0.2% to 0.7% (Mullany, et al,

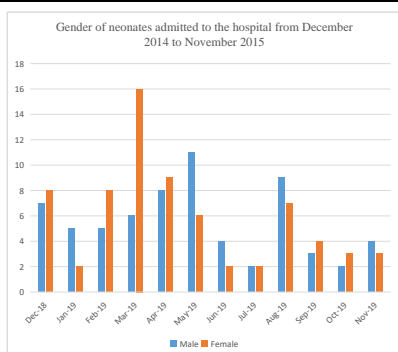
2006). Omphalitis was identified in 954 of 17,198 new-borns (5.5%) during a trial survey in Southern Nepal, (Mullany, et al, 2006). Also, in similar study at Nepal revealed 16% prevalence of cord infection in neonates (Black, et al, 2008).

The prevalence of Omphalitis in developing countries has been estimated to be between 2 and 7 in every 100 live births. The umbilicus is a common route of invasion in such settings (karumbi, Mulaku, Aluvaala, English, & Opiyo, 2013; Yared, 2014). Omphalitis accounts for up to half of neonatal death in developing countries and unhygienic cord practice was identified as the main factor that is responsible for the high prevalence in Africa (Bugaje et al, 2008). Omphalitis accounted for 28% neonatal admissions in Africa (Simiyu, 2013). In Ghana, similar work done focused on neonatal mortality and infections rate. The study found that omphalitis accounts for 63% prevalence among other infectious disease of the new-born (Adegoke, Bodagala, Ayers, & Midley, 2013). The percentage is high and alarming. These prompted the researchers to further study on the prevalence of omphalitis at St. Gregory hospital, Gomoa-East, which is also a sub-district in central region, Ghana.

## 1. Results

**Received:** 2019-11-19

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**Figure 1. Gender of neonates admitted to the hospital from December 2014 to November 2015**

Report: Figure 1. Shows that more female neonates were admitted in the month of March 2015 with a frequency of 16, followed by month April with a frequency of 9, with the least frequency in the months of January, June and July respectively. There were more male new-borns in the month of May 2015 with a frequency of 11, followed by August with a frequency of 9, with the least frequencies of 2 in the month of July and October respectively.

**Table 1. Infection status of the neonates from December 2014 to November 2015**

| Months         | Omphalitis | Other diseases | Total |
|----------------|------------|----------------|-------|
| December 2014  | 10         | 5              | 15    |
| January 2015   | 5          | 2              | 7     |
| February 2015  | 10         | 3              | 13    |
| March 2015     | 21         | 1              | 22    |
| April 2015     | 14         | 3              | 17    |
| May 2015       | 14         | 3              | 17    |
| June 2015      | 5          | 1              | 6     |
| July 2015      | 3          | 1              | 4     |
| August 2015    | 10         | 6              | 16    |
| September 2015 | 2          | 5              | 7     |
| October 2015   | 1          | 4              | 5     |
| November 2015  | 4          | 3              | 7     |
| TOTAL          | 99         | 37             | 136   |

Report: Table 1. Shows that the highest case of umbilical cord infection was recorded in the month of March

2015 with a frequency of 22 followed by April and May with frequencies of 14 respectively.

**Table 2. Prevalence of omphalitis**

| Infection        | Frequency | Percentage |
|------------------|-----------|------------|
| Omphalitis       | 99        | 73         |
| Other infections | 37        | 27         |
| Total            | 136       | 100        |

Table 2. shows that the percentage prevalence of umbilical cord infection in the studied population is 99(73%) while other infectious disease of the neonates' accounts for 37(27%).

**Table 3. Prevalence of omphalitis in relation to Gender**

| Infection status   | Male | Female | Total |
|--------------------|------|--------|-------|
| Omphalitis present | 47   | 52     | 99    |
| Omphalitis absent  | 19   | 18     | 37    |
| Total              | 66   | 70     | 136   |

Report: Table 3 shows that 47 male neonates and 52 female neonates were infected with omphalitis while 19 males and 18 females reported with other new-born disease.

**Table 4. Death from Omphalitis**

| Month         | Number of death |
|---------------|-----------------|
| December 2014 | 0               |

|                |   |
|----------------|---|
| January 2015   | 0 |
| February 2015  | 0 |
| March 2015     | 2 |
| April 2015     | 0 |
| May 2015       | 0 |
| June 2015      | 0 |
| July 2015      | 1 |
| August 2015    | 0 |
| September 2015 | 0 |
| October 2015   | 0 |
| November 2015  | 0 |
| TOTAL          | 3 |

Table 4 shows that out of the 99 neonates infected umbilical cord infection, 2 neonates died in the month of March 2015, and 1 neonate died in the month of July 2015.

**Table 5. Measure of central tendency for Ages of the new-born**

|                    | Ages (days)       |
|--------------------|-------------------|
| Mean               | 6                 |
| Median             | 5                 |
| Mode               | 2.25 <sup>a</sup> |
| Standard deviation | 3                 |

Table 5 shows that the mean age of the neonates is 6 days, median of 5days, and a multiple mode of 2 days emerged, with a standard deviation of 3.

**Table 6. Outcome of omphalitis**

| Omphalitis     | Frequency | Percentage |
|----------------|-----------|------------|
| Died           | 3         | 3          |
| Discharged     | 96        | 97         |
| Total admitted | 99        | 100        |

Table 6 shows that omphalitis accounts for ninety nine neonates were admitted to the hospital. Ninety six (97%) got well and were discharged home, while 3(3%) died as a result of the cord infection and other associated complications

## 2. Discussion of findings

On the prevalence of omphalitis in Sub- Sahara Africa, Uganda has a prevalence of 24% (Petwa, et al, 2015), Egypt 8.2% (Black, et al, 2008) and in St Luke, Apam Ghana, omphalitis accounts for 63% of the infections of the neonate (Adegoke et al, 2013). In our study, the percentage prevalence of umbilical cord infection in St. Gregory, Buduburam is 99(73%) (Table 2). From the 136 studied population, 99(73%) neonates reported with omphalitis while 37(27%) reported with other infectious diseases of the new-born (table 1). The percentage prevalence in our study is 73%. This is high but could also be because our study focused on admitted neonates as to be compared with the study at Apam which focussed on all neonates (Inpatients and outpatients) who reported to the hospital. Also, other studies done in Africa (Petwa, et al, 2015; Black, et al, 2008)

used prospective survey method in data collection which could also affect their findings as to be compared with our study which uses retrospective survey method.

St. Gregory hospital is located at Buduburam community, which is popularly known as 'Liberian Camp'. Buduburam is a refugee camp for immigrants from both Liberia and Sierra Leone. Geographical location could be a factor to a high prevalence of omphalitis in our study. St. Gregory Catholic Hospital is located in a densely populated community/ refugee camp where low income earners, and refugees resides. The high in prevalence 99(73%) of omphalitis in our study may be deduced to the study area (geography), weather condition, methodology and the study time interval. By implication, geographical location, socio-economic status, and nutritional status significantly may affect their accessibility to healthcare. This supports the literature (Sewardeka, et al, 2013). As a result of this factors, the use of cord care kits/antiseptics recommended for use by WHO in developing countries may not be effectively be in use. This can equally affect their diets during pregnancy. The availability, affordability and choice of quality food maybe affected. Pregnant mothers in such an environment may end

up consuming food which are not well balanced thereby predisposing the neonates to a high risk for infection.

The prevalence of neonatal infection varies with considerable fluctuation over time, season, and even from hospital to hospital. These variation may be related environmental condition such as weather (Sawardeka, 2004). The climate of Ghana is tropical which comprises of rainy, dry and harmattan season. Table 1 shows that most 21(22%) cases of omphalitis were recorded in the month of March, 2015, followed by April and May, with the same number of 14(15%) with the least month being October 1(1.04%). The high prevalence of umbilical cord infection in the month of March could be associated with weather condition (falls/rainy) which is an environmental factor that can harbour more micro- organisms in an environment, thereby predisposing more neonates to umbilical cord infection and this supports the literature (Sawardeka, 2004). From this study, it could be said that weather conditions could affect the percentage prevalence of a disease especially if the data are collected at a particular season, specifically during falls.

Ratio is the relationship that exists between the size, number, or amount of two things and that is often represented by two numbers. Here, it is used to identify the number of male to female proportion infected with omphalitis from the total studied population. In this study, the total number of neonates is 136(100%) of which male new-born accounts for 66(49%) and 70 (51%) of female (figure 1). It also shows that more female neonates were admitted in the month of March 2015 with a frequency of 16, followed by month April with a frequency of 9, with the least frequency in the month of January, June and July respectively. There were more male new-borns in the month of May 2015 with a frequency of 11, followed by August with a frequency of 9, with the least frequencies of 2 in the month of July and October respectively. In a Hospital based studies (Sawardekar, 2004; Faridi et.al, 1993; Bugaje et.al, 2008) from developing countries shows that there is increased risk of omphalitis among male to female. The studies are in contrast with our study findings. In our study, the total neonates with umbilical cord infection is 99 of which males were 47 (47%) and females 52(53%) (Table 3). The difference between male to female neonates in this study findings is not significant. Therefore, it could be concluded that male to female new-borns are at equivalent risk for omphalitis. Our study supports the literatures (Mullany, et al, 2006; Al- Hiari, et al, 2009).

In this study, the mean age of all the neonates is approximately 6 days (table 5). This is in agreement with a study by Bugaje et al, 2008 which concluded that the Mean age for omphalitis in Preterm babies is 3 to 5 days and 5 to 9 days for term babies respectively (Bugaje, et. al, 2008). It

could be that most of the neonates who were admitted to the Hospital that formed part of our study were carried to term. The standard deviation in our study is 3 days (table 5). This means that the mean age of the neonates are not widely dispersed. The median age for the new-borns is 6 days while a double mode of 2 days emerged.

The outcome of omphalitis among the neonates in this study are the consequences that results from the interventions of the healthcare team. These include disease process, death, degree of wellness and discharge as well as the need for continuing care. Promptly treated of uncomplicated omphalitis usually resolves without serious mortality and morbidity. In our study, of the 99(100%) new-born who were admitted for the case of omphalitis, 3(3%) were recorded dead from the infection and 96(97%) got well and were discharged home (table 6). This implies that the outcome of the disease prognosis is good if prompt treatment is initiated early. This supports the literature (Bugaje, et al, 2008). However, when presentation and treatment are delayed, mortality could be high. This study is in contrast with a comparism community based study by Karumbi, et al, (2013) which reported no mortality rate among the comparism group. Although, no mortality rate reported in their study could be because is a prospective study which compared single application of antiseptic to multiple application of antiseptic cleaning of the umbilical cord. However, it could be said that application of antiseptic either single or multiple time to the cord can markedly reduce neonatal death in Africa, especially if initiated early. This is in agreement with the study by Mullany, et al, (2006). From an evidenced based study, chlorhexidine reduces mortality rate by 31% (Imdad, et al, 2013). Based on the available evidence based literatures, our study concluded that the use of 4% chlorhexidine can be beneficial to reducing neonatal mortality and morbidity among neonates born in developing countries such as Ghana. This supports the literature (WHO, 1998).

### Conclusion

The limited number of evidenced based information on the prevalence of omphalitis in Ghana did not allow for comparison of cord infection among regions, sub districts and hospitals. The relatively limited evidence available however, suggests an increasingly prevalence of omphalitis in central region of Ghana. These findings certainly raise important concerns, as umbilical cord infection increases morbidity and mortality rate in the country, and undoubtedly compete with other diseases of the new-born for the limited resources. However improper cord care practice will potentially increase the risk of developing umbilical infection with grave consequences on mothers and the entire society. Ignoring the need to educate mothers on hygienic cord care

now, would certainly result in a greater burden in the near future.

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# Promotion and Utilization of Plantation Grown Timber Species in Ghana: The Kiln Drying Schedule of *Khaya Ivorensis*

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**Abstract:** Mahogany is ranked as one of the best known and most valuable commercial tropical timbers on the international market. These species are becoming more scarce in the wake of dwindling forest cover in Ghana with illegal logging as the major contributing factors. Since plantation species have not been used enough in the past, their kiln schedules and their drying rates are unknown. In this study kiln drying schedule for plantation grown *Khaya ivorensis* was developed. The testing method followed Terrazawa: 1965. Results indicate that the mildest drying conditions for the plantation species would be the initial and final temperatures of 65°C and 90°C respectively and this coincided with the temperature schedule T11. The wet bulb depression (WBD) of 5.5°C which also corresponds to WBD schedule of 5 was recorded. Madison Drying Schedule T11-B5 is therefore proposed for the plantation grown *Khaya ivorensis*.

**Key words:** *Khaya ivorensis*, temperature, drying schedules

## Introduction

In recent times, an increasing understanding of the science of ecology and society pressure, are causing a re-evaluation of our natural resources with emphasis on sustainable timber production, environmental awareness and improving rural economies. Ghana used to export large portions of its wood in log forms and rough lumber. In taking advantage of the social and economic benefits created by each additional processing operation, Upton and Attah (2003) reported of a paradigm shift towards the production of processed wood products. Currently, the use of wood from planted forest is something we cannot avoid, once society consumption demands an increasing of the wood production with quality and environmental care (Klitzke and Batista 2008).

As the volume of timber from preferred species decreases, potential for the commercially less-accepted species increases (Simpson 1992). When the primary wood species becomes extinct and the availability of plantation species becomes the raw material for wood industry, there would be the need to inform industry of the properties of these timber species. Green boards are usually dried as a first step in their utilization. Improved utilization of tropical wood species can help increase the economic value of the forest and thus improve the chance of sustainable management. Since drying is one key step in processing wood products, solutions to drying problems will help establish value for the species (Ofori and Brentuo 2005; Simpson 1992).

Information is therefore needed on the drying of plantation species.

Mahogany is ranked as one of the best known and most valuable commercial tropical timbers on the international market. It is acknowledged that these species are becoming scarcer in the wake of dwindling forest cover in Ghana with illegal logging as the major contributing factor. Foli *et al* (2009) described *Khaya ivorensis* (Dubini) as a fast growing species, which does well in semi-deciduous and evergreen forest, tending to do better on banks of streams.

Kiln drying of wood as defined by Hart (1966) is a dynamic balance between heat transfer from air stream to the wood, surface evaporation from the wood, diffusion of moisture through the wood and mass flow of free water in the wood. Kiln drying of wood, according to Klitzke and Batista (2008) is currently recognized as a vital element in the value of processed solid wood, with an emphasis on the improvement of its quality and cost reduction.

Generally, a schedule is developed so that drying stresses or degrade (such as checks, splits, collapse) do not exceed the strength of the wood at any given temperature and moisture content. Tsoumis (1991) defined drying schedule as a carefully worked out compromise between the need to dry lumber as fast as possible and at the same time avoid severe drying conditions that would cause drying defects.

Since plantation species had not been used enough in the past, their kiln schedules had also not been developed and that their drying rates and sensitivity to stain, surface checks, collapse, honeycomb, and warp are unknown (Simpson

1992). The Forestry Research Institute of Ghana (FORIG) has a plantation of *Khaya ivorensis* at Amantia in the Moist Semi-deciduous ecological zone in Ghana which had attained felling diameters of 90-110 cm. The objective of this study was to determine the kiln drying schedules for the plantation grown *Khaya ivorensis* and compare results with schedules of samples from the natural forest.

## 1. Materials and Methods

### 1.1 Sample Collection

The timber species, *Khaya ivorensis* (about 40 yr) were felled from both the natural forest and plantation plot of the Forestry Research Institute of Ghana (FORIG) at Amantia in the moist semi-deciduous forest zone of Ghana. *K. ivorensis* from the natural forest served as the control. Three discs (30 cm thick) were cut from different sections of each bole (1.3 m, 3 m and 7 m sections) and prophylactic treated with Dursban to prevent staining.

### 1.2 Sample preparation

A flat-sawn section of 2.5 x 12 x 25 cm from the heartwood was cut from each disc and planed through a Livello Olio (Model 700) thicknesser machine to a dimension of 2 x 10 x 20 cm with the 2 x 10 cm faces being flat-sawn. Six replicates each for the natural forest and the plantation were wrapped in polythene bags and kept in a freezer to avoid moisture lost. One end of each specimen was marked and selected for end-checking observation.

Two reference lines were drawn across the face of each specimen at right angle to each other and each 1 cm from the left most edge. The intersection of these two lines formed a reference point at which each micrometer reading was taken in the radial direction.

Each specimen was weighed using a digital balance for the initial green weight. This was done to be able to calculate the moisture content of the samples. The dimension of each specimen was measured using the micrometer screw gauge for thickness and the digital and the sliding veneer calipers for the width and length respectively.

At intervals of 10 minutes, one specimen out of six specimen from the plantation and the natural forest, was placed edge-wise in a well ventilated oven which was maintained at 103-105°C for free air circulation.

Each specimen was then taken from the oven every hour for the first eight hours on the first day. The specimen was then weighed; depth and width measured and at the same time, end and surface checking that was developing during drying at the marked ends were observed and recorded. The purpose was to ascertain the maximum value of the end check and the surface checks that was appearing in the initial stages of drying. These measurements were repeated on the second day at an interval of six hours and the last readings

done on the third day. The longitudinal readings of the specimen were done only at the beginning and at the end of the drying process.

### 1.3 Degree of honeycombing

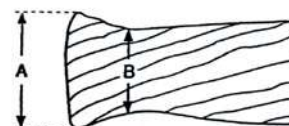
At the end of drying, the centre line of each specimen was cut off to give an approximate 2 x 10 x 10 cm piece in order to observe the degree of honeycombing and the cross-sectional deformation that had occurred. The newly exposed faces were examined for honeycomb defects and the specimen awarded a predetermined honeycomb classification set by Terazawa (1965).

### 1.4 Spool-like deformation

The two extreme ends at the cut edge for each half was labeled (A), and a point (1-2 cm) apart from (A) with a reduced thickness was also labeled as (B).

A: The thickness at the edge, B: the thinnest 1-2 cm apart from the edge

**Figure 1. Method for evaluating spool-like deformation on the section**



Thickness at points A and B at the four edges of the two halves were measured using the micrometer screw gauge. Differences between the thickest and the thinnest for each of the four was then determined. An average value for the four differences, thickness and thinnest (A-B) for the edge of each sample was evaluated. The overall mean difference for the six replicates was determined by computing the average value of the six mean differences obtained.

The degree of spool like deformation for each sample was evaluated by computing the overall mean differences obtained with values awarded in the deformation classification set by Terazawa (1965).

### 1.5 Kiln schedule code

The adopted class of initial moisture content, and wet bulb depression corresponding gives a code which in combination with temperature gives a propose schedule from the code. Each schedule is represented by a two-letter and two-number designation, such as T4-D2. The schedules merely represent a systematic way to develop the whole range of degrees of drying severity.

## 2. Results and Discussion

### 2.1 Susceptibility to drying defects

The appearance and closing of end checks at the initial stages showed, in the case of the plantation species, while 33.34% started closing as early as the 6<sup>th</sup> h, the rest (66.67%) closed after 30 hours of drying. As regards those from the

natural forest, the earliest closing of checks on the samples was the 3<sup>rd</sup> h (16.66%) and others were between the 5<sup>th</sup> h (66.67%) and after 31 h (16.66%) of drying. The longest closing time registered for natural forest *Khaya ivorensis* may be attributed to felling injury which resulted in an end to surface checking during drying as depicted in the figure below. In all cases there was no evidence of internal checking or honeycombing.

### 2.2 Evaluation of spool-like deformation

Differences in spool-like deformation for the two species were evaluated as shown in Tables 1 and 2. On the cross sectional face of the cut samples, sides labeled A refers to thickness measurement taken at the edge and the B the thinnest 1-2 cm apart from the edge (A). Values recorded for side B was subtracted from side A. This was repeated for all the eight edges from a sample.

In Table 1, results show the mean differences in thickness between A (the thickest at the edge) and B (the thinnest 1-2 cm apart) of each sample. The mean minimum thickness recorded for plantation grown *Khaya ivorensis* was -0.02 cm whilst the mean maximum difference in thickness was 0.12 cm. From similar calculations, species from the natural forest, Table 2 depicts the mean thinnest (0.10) and maximum thickness (0.26).

### 2.3 Drying conditions corresponding to the adopted defects classes

The susceptibility class relationship (or drying conditions corresponding to adopted defect type class) shows the type and class of drying defects obtained for the two types of *Khaya ivorensis*. In Table 3, the type and sizes of defects (initial checks, honeycombing and spool-like deformation) that occurred on the samples were assessed from a predetermined corresponding classification numbers done by Terezawa (1965). The shape and degree of the initial checks that appeared on the samples in the early stages of drying, was classified 1 or 2 accordingly.

Under honeycombing or internal checking, the shape and sizes of appearance on the samples were classified using Terazawa (1965). From Tables 1 and 2, the values from the mean differences recorded for the samples were used to classify for spool-like deformation. Records of Initial moisture contents (%) were also classified.

The three drying conditions (the initial temperature, wet bulb depression and final dry bulb temperature) from all the defects classes were classified and the mildest conditions (i.e. overall lowest initial temperature, overall smallest initial wet bulb depression and overall lowest final temperature) of 65°C, 5.5°C and 90°C and 60°C, 4.3°C and 85°C adopted for

### Tables

plantation and natural forest *Khaya ivorensis* respectively.

In similar manner, the same procedure of assessing the corresponding values for all types of defects were determined for the possible drying conditions for natural forest *Khaya ivorensis* as depicted in Table 4. In both species type, the predominate class B for initial moisture content was adopted in proposing a drying schedule for them.

### 2.4 Proposed drying schedule

The mildest drying conditions (that is the lowest initial temperature, smallest initial wet bulb depression and the lowest final temperature) in Tables 3 and 4 were used to propose kiln drying schedules for the samples worked on. For the plantation species, the initial and final temperatures of 65°C and 90°C respectively from Table 3 were used in Appendix 8 from which their corresponding range of temperature coincided with the temperature schedule T11. The wet bulb depression (WBD) of 5.5°C also corresponded with WBD schedule of 5. So for the plantation species, in putting together the mean adopted classes of initial moisture content of B, the WBD class of 5 and the temperature schedule of T11, Madison Drying Schedule T11-B5 is proposed as depicted in the Table 5. In similar manner, a schedule code of T10-B4 was proposed as the schedule for natural forest *Khaya ivorensis*. The proposed drying schedule is therefore the table 8.

### Conclusion

The oven drying method adopted attempts, to estimate sensitivity to drying and ultimately a kiln schedule by observing the characteristics of the various kinds of defect that developed. The wood was not susceptible to collapse or honeycombing but checked moderately in the early stages of drying. Based on the experiment at high drying temperature, initial temperatures and wet bulb depressions for *K. ivorensis* were 60-65°C and 4.3-5.5°C respectively. However, these drying schedules need to be modified during its implementation and adjusted to kiln drying condition, initial moisture content and the lumber dimensions, because drying schedule vary by species, thickness, grade and end use of the lumber.

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**Table 1. Spool-like deformation of plantation grown *Khaya ivorensis***

| Sample<br>Replicates | Thickness of cross section (A) at ends of<br>boards (mm) |       |       |       | Thickness of boards (B) at 1cm away<br>from (A) |       |       |       | Mean<br>difference |
|----------------------|--|-------|-------|-------|---|-------|-------|-------|--------------------|
|                      | No.  | A1    | A2    | A3    | A4  | B1    | B2    | B3    |                    |
| 1                    | 19.44  | 19.31 | 19.42 | 19.33 | 19.56   | 19.26 | 19.44 | 19.31 | -0.02              |
| 2                    | 19.46  | 19.41 | 19.51 | 19.47 | 19.39   | 19.33 | 19.43 | 19.4  | 0.08               |
| 3                    | 19.71  | 19.5  | 19.59 | 19.44 | 19.55   | 19.45 | 19.49 | 19.37 | 0.09               |
| 4                    | 19.54  | 19.26 | 19.45 | 19.22 | 19.35   | 19.18 | 19.32 | 19.15 | 0.12               |
| 5                    | 19.56  | 19.47 | 19.56 | 19.5  | 19.49   | 19.36 | 19.5  | 19.41 | 0.08               |
| 6                    | 19.9   | 19.62 | 19.87 | 19.61 | 19.79   | 19.58 | 19.81 | 19.57 | 0.06               |

**Table 2. Spool-like deformation of *Khaya ivorensis* from natural forest**

| Sample Replicates | Thickness of cross section (A) at ends<br>of boards (mm) |       |       |       | Thickness of boards (B) at 1cm away<br>from(A) |       |       |       | Mean difference |
|-------------------|--|-------|-------|-------|--|-------|-------|-------|-----------------|
|                   | No.  | A1    | A2    | A3    | A4   | B1    | B2    | B3    |                 |
| 1                 | 19.09  | 19.41 | 19.11 | 19.31 | 18.98  | 19.21 | 18.95 | 19.13 | 0.16            |
| 2                 | 19.57  | 19.48 | 19.4  | 19.52 | 19.27  | 19.23 | 19.24 | 19.27 | 0.24            |
| 3                 | 19.46  | 19.2  | 19.46 | 19.2  | 19.22  | 18.99 | 19.26 | 18.95 | 0.22            |
| 4                 | 19.45  | 19.21 | 19.4  | 19.15 | 19.23  | 18.97 | 19.18 | 18.9  | 0.23            |
| 5                 | 19.67  | 19.28 | 19.41 | 19.42 | 19.47  | 19.17 | 19.32 | 19.23 | 0.15            |
| 6                 | 19.8   | 19.5  | 19.55 | 19.59 | 19.65  | 19.2  | 19.22 | 19.35 | 0.26            |

**Table 3. Type and classes of drying defects for plantation grown *Khaya ivorensis***

| Defects type and<br>initial M.C. | Defect type class on samples |       |       |       |       |       | Drying conditions corresponding to adopted defect<br>type class |                  |                |
|----------------------------------|------------------------------|-------|-------|-------|-------|-------|---|------------------|----------------|
|                                  | 1                            | 2     | 3     | 4     | 5     | 6     | Initial dry bulb  | Initial wet bulb | Final dry bulb |
|                                  |                              |       |       |       |       |       | temp. (°C)  | temp. (°C)       | temp. (°C)     |
| Initial checks                   | 1                            | 2     | 2     | 1     | 1     | 1     | 65  | 5.5              | 90             |
| Honeycomb                        | 1                            | 1     | 1     | 1     | 1     | 1     |   |                  |                |
| Deformation                      | 1                            | 1     | 1     | 1     | 1     | 1     |   |                  |                |
| Initial MC (%)                   | 41.91                        | 52.03 | 60.35 | 61.43 | 54.45 | 48.25 |   |                  |                |
| MC Class                         | B                            | B     | C     | C     | B     | B     |   |                  |                |

**Table 4. Type and classes of drying defects for *Khaya ivorensis* from Natural forest**

| Defects type and<br>initial M.C. | Defect type class on samples |   |   |   |   |   | Drying conditions corresponding to adopted defect<br>type class |                  |                |
|----------------------------------|------------------------------|---|---|---|---|---|---|------------------|----------------|
|                                  | 1                            | 2 | 3 | 4 | 5 | 6 | Initial dry bulb  | Initial wet bulb | Final dry bulb |
|                                  |                              |   |   |   |   |   | temp. (°C)  | temp. (°C)       | temp. (°C)     |
| Initial checks                   | 1                            | 3 | 3 | 2 | 1 | 1 | 60  | 4.3              | 85             |
| Honeycomb                        | 1                            | 1 | 1 | 1 | 1 | 1 |   |                  |                |

|                |       |       |       |       |       |       |
|----------------|-------|-------|-------|-------|-------|-------|
| Deformation    | 1     | 1     | 1     | 1     | 1     | 1     |
| Initial MC (%) | 50.65 | 52.94 | 45.16 | 55.66 | 38.11 | 45.98 |
| MC Class       | B     | B     | B     | B     | A     | B     |

**Table 5. The proposed drying schedule T11-B5 for plantation *Khaya ivorensis***

| STEP | MC (%)   | Temperature (°C) |                     | R.H (%) | EMC  |
|------|----------|------------------|---------------------|---------|------|
|      |          | Dry bulb         | Wet bulb depression |         |      |
| 1    | above 50 | 65               | 6                   | 74      | 11.5 |
| 2    | 50-40    | 65               | 6                   | 74      | 11.5 |
| 3    | 40-35    | 65               | 6                   | 74      | 11.5 |
| 4    | 35-30    | 65               | 8                   | 67      | 9.8  |
| 5    | 30-25    | 70               | 12                  | 52      | 7.6  |
| 6    | 25-20    | 70               | 20                  | 35      | 5    |
| 7    | 20-15    | 80               | 30                  | 39      | 4.8  |
| 8    | 15-final | 80               | 30                  | 39      | 4.8  |

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# Research on Spatial Layout of Chengdu Cultural and Creative Industry Cluster Area \*

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**Abstract:** This paper uses Arc GIS software to analyze the spatial agglomeration characteristics of cultural and creative industries in Chengdu. According to multidisciplinary theory, combined with relevant information and field research, it analyses the influencing factors of the formation of agglomeration areas, and explains the dynamic mechanism of the formation of agglomeration of cultural and creative industries. The study finds that different kinds of cultural and creative industries show different distribution characteristics under the influence of the spatial carriers attached to them; on the whole, they show three spatial distribution characteristics: agglomeration along the two sides of the main traffic line, circle distribution related to the rent curve, and point agglomeration. Generally speaking, the agglomeration areas of cultural and creative industries are scattered by the influence of the attached carriers, axially distributed and circled by the influence of transportation and land rent, and the degree of agglomeration is relatively low. From the perspective of the dominant driving force of agglomeration formation, the dynamic mechanism is divided into government-led and market-led.

**Key words:** Chengdu city, cultural and creative industries, spatial distribution, dynamic mechanism

## Introduction

At the end of the 20th century, Britain first proposed the development of cultural and creative industries to cope with the domestic industrial recession and industrial transformation. <sup>[1]</sup> Subsequently, many developed countries followed the example of Britain, making cultural and creative industries another economic hot spot <sup>[2]</sup>. At present, China has also begun to vigorously promote the development of the industry. In the government document of 2009, Chengdu put forward the vision of building a "city of cultural and creative industries". Now the industry has become a major emerging industry in Chengdu, and the interaction between the industry and urban space has also received more and more attention. <sup>[3]</sup>

Based on the theories of geography, economics and other disciplines, this paper takes 61 cultural and creative industry agglomeration areas approved by Chengdu Municipal Government as the research object, uses the GIS spatial analysis method, and through the empirical analysis of cultural and creative industries in Chengdu, explores the spatial layout characteristics and formation mechanism of the industry in Chengdu. According to the spatial preference and dynamic mechanism of the industry, it provides decision support for Chengdu Municipal Government in the spatial layout planning of cultural and creative industries.

## 1. Research areas and methods

### 1.1 Regional Overview

Before 2009, the cultural and creative industries in Chengdu were in the stage of independent market growth, mainly artists and enterprises gathered spontaneously. From 2009 to 2014, the cultural and creative industries developed rapidly with the support of the government, such as No. 35 Hongxing Road and the memory of the eastern suburbs. <sup>[4]</sup> In 2012, Chengdu was named the "Food Capital of the World" and officially joined the network of creative cities. <sup>②</sup> In 2013, cultural and creative industries became one of the three main industries in Chengdu's emerging industries, ranking first in both GDP and added value. From 2014 to now, it is a period of adjustment and development driven by government policies. <sup>[5]</sup> In 2014, the Chengdu Municipal Government began to promote the integration, innovation and development of the industry and the three industries, and proposed to be in the forefront of the central and Western regions. In 2016, Chengdu formulated the Service Industry Development Plan of Chengdu (2016-2025), put forward the plan of action for famous cultural and creative cities, and strived to build a "leading central and western, first-class" cultural and creative industry benchmark city by 2025. In 2017, Chengdu formulated the 13th Five-Year Plan for the Development of Chengdu's Cultural Industry, which proposed that the cultural industry should become a

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\* **Remarks:** Creative City Network is the highest-level industrial organization on cultural and creative industries established by the United Nations. Joining the Creative City Network can prove that the city has the basic conditions for the development of cultural and creative industries, and has the opportunity to show and exchange the development of its own cultural and creative industries within the organization.

new pillar industry of Chengdu's national economy by building a modern literary industry system, so as to enhance the influence of Tianfu culture and the competitiveness of cultural industry, and provide industrial support for the construction of the cultural and creative center in the West and the world cultural city.<sup>[6]</sup>

**1.2 Data Sources**

The data used in this paper are from the library of the Chinese Cultural Creative Industry Network, the official website of Chengdu Municipal Government, the Jindian-Chengdu Cultural Relics Display System, and the research materials on the cultural creative industry in Chengdu collected extensively after field investigation.

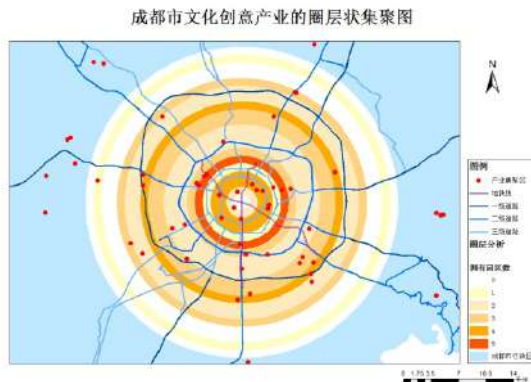
**1.3 Research methods**

Arc GIS software is used to process and analyze the information of cultural and creative industries cluster in Chengdu. Firstly, the basic information of Chengdu cultural and creative industry agglomeration area is sorted out, classified and input. Then, buffer zone analysis and nuclear density analysis are carried out, including buffer analysis within the 1.5 km range on both sides of Metro Line 1 and line 2 of Chengdu inner traffic trunk line, and buffer analysis within the 20 km range centered on Chengdu Tianfu Square. The spatial correlation of cultural and creative industries cluster in Chengdu is analyzed by nuclear density. Combining with the relevant data of Chengdu cultural and creative industries agglomeration area and field survey results, the spatial distribution and overall characteristics of cultural and creative industries in Chengdu are analyzed.

Based on Weber's location theory, Porter's diamond model and Florida's "3T" theory, this paper elaborates the dynamic mechanism behind the industrial agglomeration by analyzing the factors affecting the spatial agglomeration of cultural and creative industries, and provides decision-making reference for the follow-up development of the industry.

**2. Results and analysis**

**2.1 Spatial Distribution of Different Types of Cultural and Creative Industry Agglomeration Areas**



According to the classification of Chengdu Municipal Government and the development of this industry in Chengdu, this paper adopts Bao Feng's classification method. From the perspective of industrial spatial dependence, Chengdu's cultural and creative industry cluster can be divided into four types: old district transformation type, type upgrade type, new district planning type and resource utilization type, accounting for 8.2%, 14.8%, 39.3% and 37.7% of the total industrial cluster area in Chengdu, respectively.

**2.2 General Characteristics of Spatial Distribution of Cultural and Creative Industry Agglomeration Area**

**2.2.1 Axis Agglomeration Based on Trunk Traffic Lines**

The "Four Rings and Thirteen Shots" of the traffic arteries in the downtown area of Chengdu include the first, second and third Rings Road, the first Ring Expressway and thirteen first-level radial roads. 46.0% of the agglomeration areas of cultural and creative industries are within 500 meters on both sides of the main road, 90.8% of the agglomeration areas are within 1.5 km on both sides of the main road, 72.1% of the agglomeration areas are within or 1.5 km away from the fourth ring road, and most of the remaining areas are near the first and second grade roads.

**2.2.2 Circle Layer Distribution Related to Land Rent Curve**

Cultural and creative industries in the Tianfu Square as the center of the 1 km range of the city center did not form agglomeration area, which is affected by high rent. The number of agglomeration areas increased from the center of the city to the periphery, peaked outside the Second Ring Road 6 km away from Tianfu Square, and then decreased. The agglomeration area is mainly located at 3km, 4km and 6km away from Tianfu Square, because the transportation is convenient, the rent is appropriate, the social culture is frontier and inclusive, and there is a good "soft" environment for industrial agglomeration. There is another small peak near the Beltway (Fourth Ring Road). The agglomeration area is mainly located in the South extension of Metro Line 1, because of the convenient transportation and the policy, talent and technical advantages of the high-tech zone.



**Fig.1 Cluster distribution map of Chengdu cultural and creative industry cluster area**

**2.2.3 Discrete Distribution Based on Point Aggregation**

Based on the analysis of nuclear density of existing

agglomeration areas, there are three core agglomeration areas in Chengdu: Jinsha site and its surrounding areas, Mengzhuiwan and its

surrounding areas, Sansheng Township and its surrounding areas. Secondary core areas include Tianfu Software Park and its surrounding areas, Goose Tianxiang and its surrounding areas, People's Park and its surrounding areas. Cultural and creative industries in remote suburbs are dotted by scarce and non-replicable historical and cultural resources. Overall, the industry in Chengdu shows a point-like agglomeration, but there is no large one-sided agglomeration. Except for the point-like agglomeration areas in the main urban area have a trend of continuous development; there is no obvious spatial connection between other point-like agglomeration areas.

### ***2.3 The Dynamic Mechanism of the Formation of Cultural and Creative Industry Agglomeration Area***

Chengdu has a large number of potential talents, abundant cultural resources and gradually improved infrastructure, which provide production factors for cultural and creative industries. The government has given strong support to the industry in urban planning, industrial policy and copyright protection. The tolerant and pluralistic social environment has created a good atmosphere for the creation of creativity and the development of the industry. According to Porter's diamond theory, this paper summarizes the formation mechanism of Chengdu's cultural and creative industry agglomeration area into two types: government-oriented and market-oriented.

## **3. Conclusions and discussion**

### ***3.1 Spatial Distribution Characteristics of Cultural and Creative Industry Agglomeration Area in Chengdu***

According to the spatial dependence of cultural and creative industries, the agglomeration area is divided into four types, and different types have different spatial distribution characteristics: the transformation type of the old area is mostly distributed in the idle factory buildings and warehouses in the old urban areas or old industrial areas which developed earlier; The types of upgrading are mostly distributed in existing industrial parks, especially in high-tech industrial parks; The planning type of the new area is mainly distributed in the southern New Area and the eastern new town; Resource utilization is mostly distributed in historic and cultural blocks, villages and ancient towns with rich historical and cultural connotations.

The overall spatial layout of Chengdu cultural and creative industries cluster area has obvious characteristics of axially agglomeration distribution based on trunk traffic guidance. From the circle level, under the guidance of land rent, Tianfu Square as the center has formed an appropriate tight circle distribution in the central urban area. From the point of view of agglomeration degree, there are three core point agglomeration areas which will be connected together.

### ***3.2 The Dynamic Mechanism of Cultural Creative Industry***

### ***Agglomeration in Chengdu***

According to the different position of government and market in the process of the formation of cultural and creative industries, the dynamic mechanism of the formation of cultural and creative industries can be divided into two types: government-led and market-led. In addition to some original art production or sales industry gathering is mainly the spontaneous gathering of individuals or enterprises, most of the cultural and creative industries are greatly affected by the government's urban spatial planning and industrial policies.

### ***3.3 Discussion***

The spatial distribution of cultural and creative industries in Chengdu has obvious dispersion. Although there are large agglomeration areas, there is no obvious agglomeration distribution. The degree of agglomeration is low, the overall competitiveness is weak, and the external radiation is not strong. The eastern new town of Chengdu is the most mature and largest area in which the industry develops in Chengdu at present. With the advantages of low rent and flexible and changeable space, a large number of idle and abandoned old buildings in the east of the city will become suitable space carriers for cultural and creative industries, especially for creative design industries. Therefore, the development of this industry in the East New Town meets the needs of both the market and the government. In the future, it should continue to promote the agglomeration of this industry in the East New Town.

Because the government lags behind in data updating, the relevant data of cultural and creative industry agglomeration area obtained in this paper lags behind. Due to the limitations of concepts and data, this paper failed to make a fine quantitative study of the spatial layout and influencing factors of Chengdu's cultural and creative industries, which needs to be further improved in the follow-up study.

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# Reconstructed Urban Micro-space Planning Research Based on Place Spirit

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**Abstract:** In order to explore the urban micro space planning strategy with a sense of place, from the perspective of place spirit, this paper selected the urban micro space as the research object on the basis of the cognition of the related concepts and current problems of urban micro space, the relationship between human, micro space and place is the cut-in point. This paper puts forward the necessity of creating the spirit of micro space place, discusses the important significance of the spirit of place in urban micro space planning, and puts forward targeted strategies to guide the planning of urban micro space with the connotation of place.

**Key words:** place spirit, urban micro space, human dimension, sense of belonging

## Introduction

Compared with the big squares and parks in the city, those urban micro spaces, such as the pavilions and corridors in front of and behind the houses and the garden in the middle of the street, are the urban spaces with the most frequent interaction with the public, the most easily perceived, the most embodiment of social equity and individual freedom, and the most easily recognized and belonging sense.

Unfortunately, these spaces with many potential values have not been used reasonably, resulting in a great waste of resources.

In addition, modern urban space planning and design of good intentions, meticulous and thoughtful, are to better "people-oriented." The place theory is to understand the relationship between human and space from the perspective of human's feeling, perception, psychology, social culture, ethics and morality, and the purpose of the two coincides. Therefore, it is feasible to introduce the creation of place spirit into the planning and design of micro space in order to arouse people's sense of identity to the city.

What kind of space belongs to urban micro space? What's special about it compared with other urban spaces? How does it relate to people and places? How can we build the spirit of place into a meaningful urban space that can serve the public efficiently and make people recognize themselves and get a sense of belonging?

## 1. Place, place spirit and micro space

Place is the core concept of human geography, and it is also the research object of architecture, environmental psychology and sociology. For the scholars of human geography, it contains two meanings of material and spirit: one is that the place is a specific unit of material space, occupied by a specific material, or surrounded by a specific environment; the other is that the place carries the history of people's cognitive space, as well as the accompanying emotions and meanings<sup>[1]</sup>.

The spirit of place is the characteristic and meaning of place. It is a kind of comprehensive atmosphere. It is a kind of meaningful sense of place obtained by people's consciousness and action in the process of participation. This concept was put forward by Norberg Schulz, a famous Norwegian urban architect, in 1979. The spirit of place is formed under the joint action of objective environment and subjective perception, and changes with different situations. When people are in a certain space, they are also exposed to certain environmental characteristics. The resulting spirit is called "sense of direction" and "sense of identity". Among them, "sense of direction" refers to that people can identify the direction, know where they are, and its purpose is to give people a sense of security. Kevin Lynch believes that "a good environmental intention can make people in it get more psychological security<sup>[2]</sup>."

The urban micro space discussed in this paper is a kind of micro public space which exists in every corner of the city and depends on the main space of the city (such as square space, building space, road space, green space, waterfront space, etc.), most of which are from several square meters to hundreds of square meters. It mainly includes urban space on

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both sides of urban streets, intersections, small squares, both sides of traffic lines, urban roofs, building corners and so on, which are equivalent to human dimensions.

## 2. People, micro space and place

### 2.1 Internal relations among the three

Human being is the core of micro space being endowed with meaning and place spirit, as well as the vitality factor of micro space. The place where someone's activities take place can always attract other people's participation. Only when the micro space gathers people's popularity can it glow. Micro space is the most closely connected urban space, which is the material carrier of human activities and places. Place is the "spiritual content" behind the sublimation of the "material entity" of micro space through human experience, so that people can get a sense of belonging. Experience is the medium for people to perceive the urban micro space and establish a sense of place. The so-called experience is "experience with body and mind". Individuals participate in it, produce emotional resonance and get spiritual sublimation.

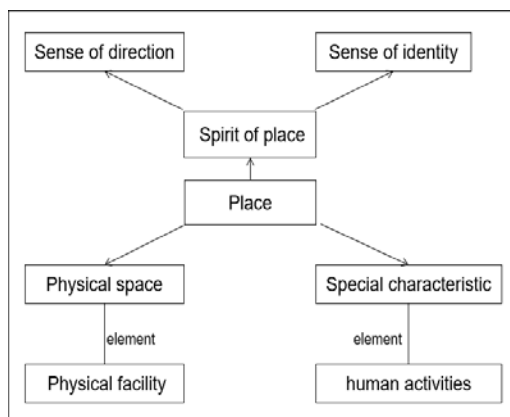


Figure 1. Schematic diagram of spiritual structure of the place

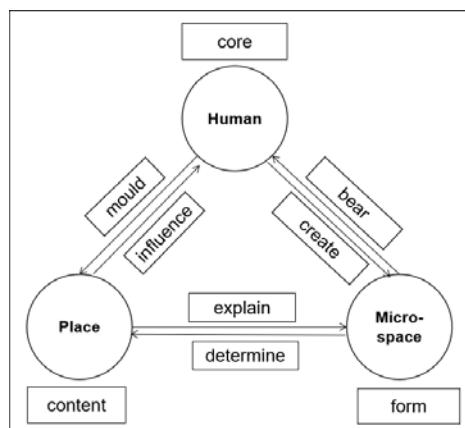


Figure 2 interactions between people and micro space

### 2.2 Human experience mechanism of micro space

Human brain receives information from space through five senses: vision, hearing, smell, taste and touch. On this basis, the brain compares and recognizes the information received by the sense with the memory image stored in the brain before, which is manifested in the overall understanding of things, or the judgment of the comprehensive attribute of things, or the preliminary explanation of the meaning of things, so as to get the overall reflection of the various parts and attributes of the objective things. This process is called "perception". Sensation and perception are collectively called perception.

Furthermore, people make the spatial environment information reappear the brain and form the spatial image on the basis of spatial perception. At this time, the space environment in mind is not the real objective environment, but the space reconstructed after being perceived by people. Different people have different perception of the same space environment, and the space image formed is also different. The planning and design of urban micro space should consider how to stimulate people's positive emotion and memory on the basis of good spatial image. The two-way acquisition of sense of direction and sense of identity can lead to a sense of belonging.

## 3. The necessity of introducing place spirit into urban micro space

### 3.1 "People oriented" -- meet the multi-level needs of the subject

First of all, based on the analysis of the hierarchy of human needs (physiological needs, security needs, social needs, respect needs and self-realization needs) put forward by Maslow, an American humanistic psychologist, urban micro space is the material carrier of most social, material and emotional communication activities. Therefore, urban micro space should also meet the needs of people at all levels to a certain extent. The shaping of the spirit of micro space place can attract people to gather here, promote the communication between the user groups, so as to eliminate the estrangement as well as enhance the feelings and strengthen the social cohesion.

### 3.2 "Spatial integration" -- weaving urban space and clarifying urban image

In the context of stock planning, those "ineffective" or "inefficient" micro spaces also belong to the main space cracks of urban built-up areas to some extent. The shaping of place spirit can make it become the medium of the main space connection to make up for the space fracture in a soft and transitional way, and countless activated micro spaces can form a relatively complete space network<sup>[3]</sup>, so that the urban space and society can be patched and improved, the

sustainable development of the city can be realized, and more possibilities can be brought for the urban renaissance. As the strategic focus of "connecting and gathering" used by a large number of public walking, the urban micro space integrated into the organic relationship network has a sense of direction and can be easily recognized by people because of its place spirit shaping, which plays a great role in the interpretation of the overall image of the city.

### ***3.3 "Greatness in Trivialness" -- enlarge public space and realize space increment***

In recent years, the 15 minute community life circle has become a hot spot in the domestic community planning and construction work. Many cities have put forward the goal of building the 15 minute community life circle in the city master plan, community planning or public service facilities standards, and put it into practice in the specific planning, design and construction. As a result, these micro spaces have the inherent advantages of walking accessibility. Because they are all over the city, they are enough to carry the diversified service and activity functions of the community life circle within 15 minutes of walking, and provide people with ubiquitous resident space, which can be said to meet the diversified needs of different periods and different groups of people to a certain extent. Second, the micro space renewal is a small-scale transformation, with little investment and will not change the existing urban texture and spatial pattern, so it is convenient to put into practice and can realize rapid and flexible transformation according to the needs of community residents.

### ***3.4 "Linkage development" - give full play to catalyst effect and promote urban renewal***

The city we live in is a complex organism. As the node space of the city, the micro space is like the "cell" of the city body. It is organically linked together through streets, corridors and so on, which together constitute the traffic network of the city. At the same time, it also forms the whole intention space of the city. The creation of place spirit helps micro space to become a "catalyst point", and then has an impact on the renewal of adjacent blocks and even cities, forming a chain effect of point, line and surface.

### ***3.5 "Culture reshaping" - continue urban context and strengthen urban characteristics***

Duan Yifu, an American Chinese geographer, puts forward that spatial experience, as a hidden element, is one of the most direct manifestations of urban context. Nowadays, people have realized that the shaping of urban characteristics depends on the cultural penetration from point to area. An especially in historical area, international experience shows that those who only pay attention to the cultural protection and construction of landmark buildings will lead to the possibility of the lack of cultural context and vitality of the

city. And the urban space place in daily life is becoming the main role of the characterization of urban cultural characteristics and an important material carrier of cultural identity.

## **4. Micro space design strategy from the perspective of place spirit**

### ***4.1 Main body positioning***

Analyze the micro space and its adjacent elements, define the main body for functional positioning; any planning and design should be carried out on the basis of fully analyzing the object and surrounding elements. Based on the understanding of micro space's position, area and form, this paper analyzes the function of its attached main space, the social structure of its nearby users (including occupation, economic status, nationality, family background, life custom, etc.) and the actual material and spiritual needs. It is necessary to make detailed and detailed planning for various factors that induce and support outdoor activities.

### ***4.2 Spatial integration***

According to the original form of space, we can integrate the micro space with innovative methods, and appropriately use the grafting, stitching, softening and compounding methods in architecture to shape the spirit of micro space place. For example, the micro space existing in the vicinity of the university can be grafted, while the commercial complex is a city space with strong commercial atmosphere, and its own cultural connotation is relatively weak. Therefore, we can use the rich and thick cultural background of the nearby universities to create micro space, and most of the users are students, which just fits the emotional resonance of the users.

### ***4.3 Cultural guidance***

Each place and environment has its own deep history and culture, which is different from other places. Their spatial structure, texture and different morphological characteristics reflect the local historical events and cultural accumulation. It is the inheritance and continuation of these elements that promote the change of space material form, shape a meaningful place, and also affect people's attitude and way of perceiving this space<sup>[4]</sup>. The micro space located in the historical and cultural area and its surrounding areas should be coordinated with the surrounding buildings and environment, continue the elements such as buildings, paving materials, colors, greening and planting, maintain the integrity of style and play the role of art and culture.

### ***4.4 Characteristic enhancements***

On the basis of respecting the original space, this paper analyzes the local elements including climate, surrounding geographical conditions, topography, hydrology, animal and plant communities, folk culture, etc. Fully understand their



significance for the construction of micro space landscape, strengthen the characteristics of local elements [5], striving to root in the region to the maximum extent, and then establishing a close relationship with the site and try to use local materials.

### Conclusion

The urban micro space design based on the spirit of place does not attempt to change the blueprint of urban planning, but in the context of the blueprint of urban painting, it is expected to achieve a win-win effect of efficient use of urban space and alleviating the direction of urban population and the lack of emotion in a step-by-step way.

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# Explaining the Cold War's End: From Prospective Gorbachev's Belief System

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## Introduction

From the moment the Cold War ends, how to explain it is still controversial<sup>1</sup>. Brooks and Wohlforth argue that the isolation by globalization of Soviet Union led to the end of the Cold War<sup>2</sup>. Constructivism holds the view that the change of the basic identity of the Soviet leadership or elite caused the re-orientation of the country's basic opposition to competition with the West<sup>3</sup>. While, realism believes that changes of the distribution of power in the international system have ended the Cold War<sup>4</sup>.

In this paper, I will analyze the end of Cold War from the prospective of Gorbachev's belief system. The Soviet Union's foreign strategy in that period, "New Thinking", is the most important reason for the end of the Cold War, because the core content of the "New Thinking" was to prevent the Soviet Union from confronting the United States and end the Cold War. Gorbachev's belief system largely influenced and eventually produced "New Thinking".

This paper will first introduce the historical background of the end of the Cold War. Then it will analyze Gorbachev's belief system and how it produced the "New Thinking" strategy and ultimately ended the Cold War. Finally it will make a brief conclusion.

## 1. The Cold War and the End

After the end of World War II, Churchill delivered a speech entitled "The Power of Peace" in Fulton, Missouri,

USA<sup>5</sup>. He used the term "Iron Curtain" to describe Europe's ideological division between Western Europe and Eastern Europe, calling it the Cold War. Western European countries are autonomous, based on Western capitalism and democratic principles, while Eastern European countries are under the control of Soviet communism<sup>6</sup>. In 1989 and 1990, the Berlin Wall collapsed, borders were opened, and free elections overthrew communist regimes throughout Eastern Europe. At the end of 1991, the Soviet Union disintegrated. After half a century of confrontation between two superpowers, the Cold War ended in a surprisingly peaceful way.

It is important to determine when the Cold War end, because this determination helps to show what is going on for the end of the Cold War<sup>7</sup>. Many scholars have studied why the Cold War ended. But there is a misconception that the end of the Cold War is linked to the demise of the Soviet Union<sup>8</sup>. Although later events proved to be more compelling and dramatic, there is considerable evidence that by the spring of 1989, many key Western figures had largely accepted the idea that the Cold War had basically ended<sup>9</sup>. On November 18, 1988, the front page of the Washington Post published the British Prime Minister, Margaret Thatcher, who first announced in an interview that the Cold War was over. "We are not in the Cold War now," she pointed out, but in a "newer relationship broader than the Cold War"<sup>10</sup>. Three weeks later, Ronald Reagan recognized that the Soviet Union

<sup>1</sup> Wilson, J. (2014). *The triumph of improvisation: Gorbachev's adaptability, Reagan's engagement, and the end of the Cold War*. Cornell University Press.

<sup>2</sup> Brooks, S. G., & Wohlforth, W. C. (2001). Power, globalization, and the end of the Cold War: Reevaluating a landmark case for ideas. *International Security*, 25(3), 5-53.

<sup>3</sup> Ibid.

<sup>4</sup> English, R. (2007). Perestroika without politics: how realism misunderstands the Cold War's end. *Explaining War and Peace: Case Studies and Necessary Condition Counterfactuals*, 237-260.

<sup>5</sup> Hogan, M. J. (1992). *The end of the cold war: its meaning and implications*. Cambridge University Press.

<sup>6</sup> Ibid.

<sup>7</sup> Mueller, J. (2004). What was the Cold War about? Evidence from its ending. *Political Science Quarterly*, 119(4), 609-631.

<sup>8</sup> English, R. (2007). Perestroika without politics: how realism misunderstands the Cold War's end. *Explaining War and Peace: Case Studies and Necessary Condition Counterfactuals*, 237-260.

<sup>9</sup> Mueller, J. (2004). What was the Cold War about? Evidence from its ending. *Political Science Quarterly*, 119(4), 609-631.

<sup>10</sup> Ibid.

would become an American ally again, as it did during World War II<sup>11</sup>.

Moreover, the end of the Cold War was mainly determined by Soviet Union's foreign policy, because in 1983, the escalation of tensions between superpowers was still a clear policy of the United States<sup>12</sup>. The National Security Adviser of Ronald Reagan provided the National Security Decisions (NSDD) in an open memoir<sup>13</sup>. The Policy Document proposes a three-pronged strategy: "to resist Soviet imperialism; to impose internal pressure on the Soviet Union to weaken the roots of Soviet imperialism; to negotiate on the basis of strict adherence to principles to eliminate unresolved differences."<sup>14</sup> The United States will also use "significant ideological/political attacks" to expose Soviet tyrannical actions. In this case, only Moscow would make concessions, and cooperation between the two superpowers will take shape. So the Soviet Union's strategic adjustment was the most important direct cause of the world political changes in the 1980s. Many analysts hold the view that the dramatic changes in Soviet foreign policy initiated by Gorbachev marked the beginning of the end of the Cold War<sup>15</sup>. In other words, Soviet Union's foreign policy that Gorbachev called "New Thinking" contributed to the end of the Cold War.

## 2. How belief system lead the End of Cold War

There are many academic explanations for the end of the Cold War. However, it is difficult to explain from the international system level why the Cold War ended in such a peaceful way. For example, in the view of structural realism, bipolar system is the most stable international system<sup>16</sup>. And because Soviet foreign policy are the most important factors for the end of the Cold War, comparing to the US foreign policy. So, this essay mainly focuses on the individual level of Gorbachev's belief system to analyze the "New Thinking" policy-making, because this policy eventually led to the end of the Cold War.

When it comes to the end of the cold war, Gorbachev is indispensable. Holmes's book *Post-Communist* states that "the Cold War ended because Mikhail Gorbachev and their

cronies wanted it to"<sup>17</sup>. The advent of Gorbachev brought dramatic new changes to foreign policy<sup>18</sup>. And He actually played an important role in the end of the Cold War. So an in-depth understanding of the individual belief system of Gorbachev is crucial to explain why the Cold War ended.

The belief system is a prism that influences the actor's perception and diagnosis of political events<sup>19</sup>. These beliefs also provide norms, standards and guidelines that affect the choice of strategies and tactics by the actor, as well as the organization and balance of the actor with respect to other actions. The belief of a political leader about the nature of political conflicts, the extent to which his historical development can be formed, and the concepts of his correct strategy and tactics all attribute the actor's decision<sup>20</sup>.

Ole Holsti points out that the beliefs of policymakers may play an important role in determining their policy choices<sup>21</sup>. George believes that belief system provides an important input for political decision-making and behavioral analysis of leadership style<sup>22</sup>. Moreover, Leites and George acknowledge that the way national leaders view the world and each other fundamentally affects their policy choices<sup>23</sup>. Decision makers differ greatly in their choice of propensity, beliefs, and personality traits; these feature structures form the target range of decision makers and shape decision makers' analysis of alternatives.

The end of the Cold War was linked to Gorbachev's personal goals and ideals, and it also reflected the belief system that motivated him to pursue them. Following George's approach, it can analyze the belief system of Gorbachev:

2.1 Self-image: Gorbachev began to acknowledge the inadequacy of the Soviet Union's past international behavior.

<sup>17</sup> Dryzek, J. S., & Holmes, L. (2002). *Post-communist democratization: political discourses across thirteen countries*. Cambridge University Press.

<sup>18</sup> Blum, D. W. (1993). The Soviet foreign policy belief system: Beliefs, politics, and foreign policy outcomes. *International Studies Quarterly*, 37(4), 373-394.

<sup>19</sup> George, A. L. (1969). The "operational code": A neglected approach to the study of political leaders and decision-making. *International studies quarterly*, 13(2), 190-222.

<sup>20</sup> Ibid.

<sup>21</sup> Holsti, O. (1970). The "operational code" approach to the study of political leaders: John Foster Dulles' philosophical and instrumental beliefs. *Canadian Journal of Political Science/Revue canadienne de science politique*, 3(1), 123-157.

<sup>22</sup> George, A. L. (1969). The "operational code": A neglected approach to the study of political leaders and decision-making. *International studies quarterly*, 13(2), 190-222.

<sup>23</sup> Walker, S. G. (1990). The evolution of operational code analysis. *Political Psychology*, 403-418.

<sup>11</sup> Ibid.

<sup>12</sup> Suri, J. (2002). Explaining the End of the Cold War: A New Historical Consensus?. *Journal of Cold War Studies*, 4(4), 60-92.

<sup>13</sup> Ligachev, Y. (1993). Inside Gorbachev's Kremlin: The Memoirs of Yegor Ligachev, trans. Catherine A. Fitzpatrick, Michele A. Berdy, and Dobrochna Dyrz.

<sup>14</sup> Ibid.

<sup>15</sup> Stein, J. G. (1994). Political learning by doing: Gorbachev as uncommitted thinker and motivated learner. *International Organization*, 48(2), 155-183.

<sup>16</sup> Ibid.

By 1989, for Gorbachev, it was almost necessary to admit frankly the failure of the past foreign policy<sup>24</sup>.

2.2 The image of allies: "Humanitarianism" is formally accepted as part of the Marxist tradition. This reflects a shift from the patriarchal system in the Soviet Union's relationship to the new "interdependence" framework<sup>25</sup>.

2.3 The image of the adversaries: The core concept of the nature of capitalism is directly challenged by the argument that capitalism can pursue a realistic policy, without resorting to militarism or neocolonialism<sup>26</sup>.

2.4 The essential nature of international politics: According to the introspection of "New Thinking", "the interests of all mankind" take precedence over class interests, thus the main course of Soviet policy was oriented towards cooperation rather than sectarian objectives<sup>27</sup>.

2.5 The flow of history: The flow of history is now described as an independent process, known through empirical means. Although this does not mean giving up the long-term victory of socialism, from all practical purposes, the deterrent variant of historical materialism has been put aside<sup>28</sup>.

2.6 The nature of change: The "comprehensive" aspect of dialectics is empirical; while its opposite or negative aspects are understated. Thus, communism and socialism are seen as distinct entities, rather than diametrically opposite poles, and are members of a larger (integrated) whole<sup>29</sup>.

By analyzing the belief system of Gorbachev, it can be concluded that Gorbachev has the characteristics of higher cognitive complexity, which is consistent with the changes embodied by the later "New Thinking".

First, the Gorbachev's self image led him to reflect on the Soviet system and to seek reform rather than complacency. At the end of 1988, Gorbachev's ideas led him to launch a far-reaching and fundamental attack on the established concept of security in the Soviet Union. Gorbachev repudiated the class basis of international relations that had dominated Soviet thinking since the birth of the Soviet Union<sup>30</sup>.

Second, Gorbachev's image of rivals also made him disapprove of the opposition mode of the Cold War. He soberly aware that Soviet socialism cannot replace capitalism,

and the two systems would coexist for a long time. Therefore, his first step was to improve Soviet-American relations and try to get rid of the shackles of the Cold War. An important part of Gorbachev's "New Thinking" is that recognition that capitalism is not in a period of absolute stagnation and depression, while adhering to Vladimir Lenin's theory. In terms of the characteristics of the times, the high development of economic science and technology makes the world increasingly interdependent in economy and politics. There is no choice among major powers except cooperation.

Next, Gorbachev's understanding of the image of his allies is also a basis for his "New Thinking" policy. On the issue of mutual relations among socialist countries, the "New Thinking" recognizes the diversity of the international communist movement and the different paths and characteristics of socialist construction. It emphasizes the construction of a humane and democratic socialism. Socialist countries should respect each other and learn from each other's experience so as to solve the new problems raised by life. The theory of "New Thinking" reflects the change of Soviet leaders in decision-making, and the diplomatic work of the Soviet Union has a lot of obvious changes, which has a great impact on the current international relations.

Finally, Gorbachev's understanding of international politics also shaped the policy of "New Thinking". For Gorbachev, he has something more important than power, fame and national stability. As mentioned before, one of them is to rebuild the new world order based on the concept of "New Thinking". In this regard, at least in Gorbachev's own view, this allowed him to work with Woodrow Wilson, Mahatma Gandhi and other prophets who advocated universalism in the 20th century. On the issue of world structure, "New Thinking" still emphasizes the concept of bipolarity. But at the same time, it acknowledges that the world is beginning to move toward "diversity", emphasizing that in the current multi-polar world where there are multiple power centers. He once said that it is impossible to solve all human and global problems by the strength of one or several countries<sup>31</sup>. On the issue of war, "New Thinking" began to abandon the traditional concept that the world war is inevitable and that war is a means of achieving political goals. He believed that the problem of human existence is above all else, and the interests of all mankind are higher than class interests. Therefore, it advocates maintaining a minimum level of strategic balance through nuclear disarmament. At the end of October 1988, Gorbachev began to publicly demonstrate his core doctrine to the world on the

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> Blum, D. W. (1993). The Soviet foreign policy belief system: Beliefs, politics, and foreign policy outcomes. *International Studies Quarterly*, 37(4), 373-394.

<sup>27</sup> Ibid.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

<sup>30</sup> Stein, J. G. (1994). Political learning by doing: Gorbachev as uncommitted thinker and motivated learner. *International Organization*, 48(2), 155-183.

<sup>31</sup> Stein, J. G. (1994). Political learning by doing: Gorbachev as uncommitted thinker and motivated learner. *International Organization*, 48(2), 155-183.

platform of the United Nations General Assembly, which was opposing Churchill's "Iron Curtain Speech"<sup>32</sup>.

It is fair to say that the Gorbachev's Belief System guided his foreign policy, "New Thinking", in a very different way from that of his predecessors. The content of the New Thinking policy is to ease the relationship between the United States and the Soviet Union, end the arms race, and end the Cold War. Therefore, the New Thinking policy of the Soviet Union is the most important reason for the end of the Cold War, and the New Thinking policy was born because of Gorbachev's belief system. So Gorbachev's belief system can explain why the Cold War ended.

It is worth noting that the long-term ideology of the Soviet Union and Gorbachev's belief system are not two separate independent variables. They influenced each other, shaped each other, and ultimately produced the "New Thinking" Policy. Without the long-term evolution of ideology in the Soviet Union, Gorbachev had no way to successfully implement "New Thinking". Without Gorbachev, other leaders may adopt more aggressive means, or at least the Cold War would not end so soon.

However, Wohlforth argues that foreign policy is largely to cope with constant material incentives<sup>33</sup>. He believes that the relative decline of the Soviet economy was the root of the "New Thinking" policy. The real motivation of Gorbachev is to open up the international economy to improve Soviet citizens welfare. Gorbachev and his colleagues believe that their policy of engagement, austerity and revitalization is the best response to the relative economic decline of the Soviet Union. As Gorbachev said in a distinctive speech to the Politburo in 1986, "Our goal is to prevent the next arms race. If we don't do this, the threat to us will increase. We will lose this competition because we are already at the limit of our ability."<sup>34</sup> So Gorbachev's New Thinking policy is only a rational compromise made by the international situation.

However, Kramer believes that the "New Thinking" idea is basically independent, and they are much more closely related to Gorbachev's foreign policy response than the relative decline<sup>35</sup>. In fact, the Soviet Union's relative decline is far before 1985. If the relative decline is considered to be the most important, Andropov should be

inclined to the general direction like Gorbachev<sup>36</sup>. However, Andropov and Gorbachev have more obvious differences in foreign policy. Moreover, the Soviet Army in the late 1980s was still fully capable of implementing the Leonid Brezhnev doctrine. If in March 1985 Viktor Grishin, Grigory Romanov, Nikolai Tikhonov and other hardline members of the Political Bureau served as the highest ranking of the Communist Party of the Soviet Union rather than Gorbachev, Brezhnev's doctrine would undoubtedly remain fully effective. None of these people would have expected a dramatic change in Soviet foreign policy, especially in Eastern Europe<sup>37</sup>. In 1991, the old guard communists staged a coup against him, and if they succeeded, they might re-establish Cold War hostility<sup>38</sup>.

### 3. Conclusion

In conclusion, how to explain the end of the Cold War is a controversial topic. The Cold War suddenly ended in a peaceful way beyond the expectations of the whole world. In my opinion, the analysis of international system cannot adequately explain the end of Cold War. Meanwhile, the influence of US strategy and policies on the end of the Cold War is far less than that of the Soviet Union, especially in the early days of Reagan's administration. Therefore, to a large extent, the Cold War was caused by the Soviet Union's "New thinking" policy. This paper mainly analyses the influence of Gorbachev's belief system on the end of the Cold War from the individual level. I argue that Gorbachev's belief system can explain why the Cold War end, because it guided the "New Thinking" policy, which result in the end of Cold War.

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<sup>35</sup> Brooks, S. G., & Wohlforth, W. C. (2001). Power, globalization, and the end of the Cold War: Reevaluating a landmark case for ideas. *International Security*, 25(3), 5-53.

<sup>36</sup> Kramer, M. (1999). Ideology and the cold war. *Review of International Studies*, 25(4), 539-576.

<sup>37</sup> Ibid.

<sup>38</sup> Mueller, J. (2004). What was the Cold War about? Evidence from its ending. *Political Science Quarterly*, 119(4), 609-631.

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# Research on the Optimization of Innovation in Ecological Environment of Small and Micro Enterprises

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**Abstract:** Firstly, the essay indicates three dimensions of innovation ecological environment in small and micro enterprises through 298 samples of data analysis, which are technology, system and management. Secondly, the bottlenecks that small and micro enterprises faced in these regards are analyzed; Finally, specific measures to solve the constraints in innovation in ecological environment of such enterprises are put forward in this essay. It has been found that many factors are effective to optimize the innovative ecological environment of small and micro enterprises, including modern enterprise system, scientific and technological talents, investment, innovation mode, knowledge management and many other aspects.

**Key words:** small and micro enterprises, ecological environment, technology innovation, system innovation, management innovation

## 1. The analysis of the survey on current situation of innovation in ecological environment of small and micro enterprises

On the basis of the standard procedure, questionnaire in innovative ecological environment of small and micro enterprises is designed to determine the quantity and content of the specific indicators that should be included in the three dimensions of innovation in technology, system and management, and some small and micro enterprises in Zhenjiang are taken as the objects of the questionnaire. The survey is based on 298 effective samples collected on the spot or entrusted, and the samples of the survey are analyzed in terms of mean value and variance.

### 1.1 The analysis of the current situation of system

**Table 1. Statistical analysis of system innovation of small and micro enterprises**

|   | N   | minimum | maximum | mean value | standard deviation |
|---|-----|---------|---------|------------|--------------------|
| whether the property right system of enterprises is clear or not      | 297 | 1       | 5       | 3.61       | .917               |
| whether the owner and the operator need to be separated               | 296 | 1       | 5       | 3.07       | .973               |
| whether the organization forms are various or not                     | 296 | 1       | 5       | 3.23       | 1.005              |
| professional team with high complementary of knowledge and technology | 297 | 1       | 5       | 3.82       | .742               |

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### *innovation in ecological environment*

It can be seen from table 1 that the mean value of system innovation of small and micro enterprises is between 3 and 4, among which the mean value of "professional team with high complementary of knowledge and technology" is the highest, which is 3.82, indicating that these small and micro enterprises attach relatively high importance to professional technical team. The mean value of the indicator of "whether the owner and the operator need to be separated" is only 3.07, which shows that the system innovation of small and micro enterprises is not very prominent, the governance structure is not clear, and the core competitiveness is not strong.

### **1.2 The analysis of the current situation of management innovation in ecological environment**

It can be seen from table 2 that the mean value of management innovation of small and micro enterprises is between 3 and 4, that is to say that the average management level of small and micro enterprises is still in a relatively low state, with two of them are close to 4. The mean value of "continuous improvement of after-sales service" is the highest, which reaches 3.98, followed by "good control of

cost, price and sales", which reaches 3.89. This shows that small and micro enterprises pay more and more attention to after-sales service and product production process, and they do relatively excellent in these aspects of management. However, the "people-oriented management" and other indicators is not ideal which shows that small and micro enterprises has the potential for further improvement in these regards.

**Table 2. statistical analysis of management innovation**

|  | N   | minimum | maximum | mean value | standard deviation |
|--|-----|---------|---------|------------|--------------------|
| more information than competitors                  | 295 | 1       | 5       | 3.24       | 1.169              |
| people-oriented management                         | 296 | 1       | 5       | 3.36       | 1.029              |
| good control of cost, price and sales              | 296 | 2       | 5       | 3.89       | .674               |
| high level of internal organization and management | 296 | 1       | 5       | 3.61       | .777               |
| continuous improvement of after-sales services     | 295 | 1       | 5       | 3.98       | .697               |

### **1.3 The analysis of the current situation of technology innovation in ecological environment**

It can be seen from table 3 that the mean value of technology innovation of small and micro enterprises is between 3 and 4, which close to 3.5. The mean value of the "rapid use of new technology to launch new products" among them is the largest, which is 3.66. From the whole sample of small and micro enterprises in Zhenjiang, it

indicates that much attention has been paid to innovation technology, product and the process. But the current situation is not very ideal. As far as the overall level of small and micro enterprises is concerned, there is still a big gap between innovative ability and such enterprises in industrial developed areas. Independent innovation is a relatively difficult road for most small and micro enterprises with less resource endowment and strength.

**Table 3. statistical analysis of technology innovation**

|   | N   | minimum | maximum | mean value | standard deviation |
|---|-----|---------|---------|------------|--------------------|
| rapid use of new technology to launch new products      | 296 | 2       | 5       | 3.66       | .782               |
| many new technologies adopted                           | 295 | 1       | 5       | 3.59       | .828               |
| high proportion of new product revenue in total revenue | 297 | 1       | 5       | 3.35       | .907               |
| rapid growth of new product development                 | 297 | 1       | 5       | 3.56       | .849               |

To sum up, the innovation in technology, management and system of small and micro enterprises are not optimistic. Most of them are in a semi specialized, semi refined and semi new state. That is to say, though there is still a large gap in the innovation level of small and micro enterprises in developed regions, they gradually start to attach importance to innovation in various fields. And technology and management innovation of small and micro enterprises are better in these three aspects, while system innovation is relatively poor.

## **2. Analysis on the restrictive factors of innovation in ecological environment of small and micro enterprises**

### **2.1 Problems in system innovation of small and micro enterprises**

#### **2.1.1 Personal and family business are the main organizational forms**

Most small and micro enterprises lack the consciousness of innovation and development when they make enterprise strategy, product strategy and investment strategy. The



family management mode is fundamentally exclusive in competition thus making the small and micro enterprises lack of power in independent innovation, which is on account of its inherent defects. Focusing on short-term interests and lacking of strategic vision hinder the independent innovation of small and micro enterprises.

#### *2.1.2 Lack of the system of property rights*

The property rights of small and micro enterprises are mixed with the personal property rights of enterprise owners. There is no clear boundary between personal property and corporate property, and there is no independent and complete property rights system of modern enterprises. In a complete sense, the structure of property right is single in small and micro enterprises, which can not get rid of the interference of family relationship.

#### *2.1.3 Coexist of advantages and disadvantages in governance mechanism*

There is no agency problem because the property of small and micro enterprises is closely related to the personal property of entrepreneurs. Although there are many advantages, small and micro enterprises have obvious disadvantages in talent, external financing, corporate goals and other aspects due to the lack of professional managers.

#### *2.1.4 Lack of management system*

Most small and micro enterprises' family management plays an important role in the small-scale start-up period. However, with the development of the scale, it is necessary to introduce a variety of foreign professional talents into the core leadership of the enterprise, which often leads to the formation of two interest groups between professional managers and the relatives of the enterprise owners. This thus leading to various contradictions within the enterprise, such as the difficulty in implement in management systems.

### **2.2 Problems in management innovation of small and micro enterprises**

#### *2.2.1 Laggard management concept*

When starting a business, there are ties of family and friendship, which can make small and micro enterprises cooperate closely to meet with difficulties. However, the shortcomings of family management will hinder the further development of small and micro enterprises when the enterprise developed, Because it is difficult for foreign professionals to carry out their work when family members or relatives and friends occupy the core position in the enterprise. The contradiction between family members and foreign employees often leads to the increase in management cost.

#### *2.2.2 Weak sense of business strategy*

Small and medium-sized enterprises are flexible in operation and easy to exchange, but many of them ignore the formulation of strategies, or even have no enterprise

strategies. Their strategic awareness is relatively vague and their business activities are very random and blind with the pursue of short and fast-projects in technological development.

#### *2.2.3 Lack of methods of management innovation*

Innovation of small and micro enterprises is a complex management activity, involving research and development, manufacturing, marketing, strategy and other aspects. The innovation management economy of small and micro enterprises is relatively weak, and the level of innovation management is generally low, which directly leads to the lack of innovation ability.

### **2.3 problems in technology innovation of small and micro enterprises**

#### *2.3.1 Strong external dependence of Technology*

The ownership rate of independent intellectual property rights of small and micro enterprises is low and they do not have there own professional and technical characteristics. The weak technological content of small and micro enterprises' products and the lack of technical support with core competitiveness lead to the low level of the whole domain, and the homogenization of enterprise development and competition leads to the inevitable price war. These factors are important reasons for the slow growth of most small and micro enterprises.

#### *2.3.2 Insufficient investment in technological innovation*

It is difficult for small and micro enterprises to make breakthrough in the research and development of technology, and it is difficult for them to bear these risks. Technological innovation needs external resources support, such as financial support, technical support, etc. But now, small and micro enterprises have obstacles to obtain these external resources thus carrying out limited technological innovation.

#### *2.3.3 Lack of scientific and technological innovation talents*

Most of the scientific and technological innovation talents are concentrated in scientific research systems, and most of the rest are in large and medium-sized enterprises. "It is difficult to retain talents" and "it is difficult to attract talents" have become the dual problems of small and micro enterprises.

#### *2.3.4 Lack of internal innovation platform*

At present, most small and micro enterprises have not established Technology R&D Centers. And there are many problems in those enterprises which have established Technology R&D centers, such as imperfect facilities, shortage of scientific research funds and lack of scientific research and development talents.

### **3. Analysis on the optimization measures of innovation in ecological environment of small and micro enterprises**

### ***3.1 Optimize the system innovation in ecological environment of small and micro enterprises***

#### ***3.1.1 Promote diversified organizational forms of innovation***

From the perspective of the internal organizational form of small and micro enterprises, it is suitable for them to reform the leadership system and its setting in accordance with the "flat organizational structure" mode and the goal of "high efficiency and strong adaptability", so as to fully reflect the advantages of the Chinese old saying that "a big ship turns slow". For small and micro enterprises, especially for micro enterprises, a simple and effective linear function structure can be adopted. In particular, it is required that the organizational level should be small, and the division of management functions should not be too strict in order to improve the efficiency of management. For small enterprises with a larger scale, a linear function structure can also be adopted although the main principle is still short and efficient. When setting up functional departments, the "small but complete" way is undesirable, which is out of date.

From the external organizational form of small and micro enterprises, such enterprises can establish a loose cooperative production system with the center of specialized cooperation. With the core of one or more products, they can regard large and medium-sized enterprises as the center and many small and micro enterprises as the satellites to establish a central satellite system; they can either take marketing enterprises as the leader and manufacturing enterprises as the basis to establish an integrated production and operation enterprise group<sup>[1]</sup>. In Italy, which is known as the "Kingdom of small and micro enterprises", such enterprises have formed a variety of joint models based on market, which aimed at division of labor and cooperation. At the same time, many small and micro enterprises are increasingly interested in establishing enterprise groups in order to reduce risks and directly enhance their own strength. The combination of small and micro enterprises in the eastern coastal areas of China such as Guangdong and Zhejiang has represented a good trend and become a powerful weapon for the development and growth of small and micro enterprises.

#### ***3.1.2 Promote the socialization and publicity of the property right system***

The opening of property right broadens the scope of enterprise financing, which is conducive to technological progress. It changes the property right structure of small and micro enterprises, and becomes a real enterprise composed of diversified investment subjects; it is also conducive to fundamentally standardizing the corporate governance structure and generating long-term cohesion. The significance of the socialization and publicity of property

rights lies in that it can broaden the financing channels of small and micro enterprises, disperse the risks of shareholders, strengthen the incentives and optimize the ownership structure<sup>[2]</sup>. To a great extent, the vitality of small and micro enterprises comes from the good property rights relationship of enterprises. Only by establishing a clear and reasonable modern enterprise property rights system, realizing the tradability of property rights, the diversity and rationality of property rights, can the system provide guarantee and power for the further development of small and micro enterprises.

#### ***3.1.3 Promote the rational construction of governance structure***

On the basis of clarifying the property rights, small and micro enterprises in family organization form should take the professional manager system into consideration, and improve the corporate governance structure such as the board of directors and the general manager according to the requirements of the modern enterprise system, so as to standardize and systematize the responsibilities, rights and behaviors of the investors and operators in small and micro enterprises. At the same time, small and micro enterprises should change their decision-making methods, replacing the parents' individual experience decision-making with the scientific decision-making of the management team according to the decision-making procedures of the modern enterprise operation mechanism. Such enterprises should formulate and implement strict rules of the procedure of the shareholders' meeting and the board of directors, establish scientific decision-making mechanism and system to regulate the decision-making activities of small and micro enterprises; they should make use of social advisory bodies as "external intelligence and external brain" to improve the scientific level of major decision, so as to make decision-making scientific and standardized and avoid and reduce mistakes as much as possible.

#### ***3.1.4 Promote the modernization of enterprise management***

First of all, the systematic construction of small and micro enterprise management must establish the system of intellectual capital incentive. In the era of knowledge economy, intellectual capital has become the most scarce resource for economic and social development. How to effectively encourage intellectual capital through the arrangement of distribution system has become the core problem to the sustainable development of small and micro enterprises. Therefore, small and micro enterprises must provide a distribution system of factor contribution through the distribution system based on the measurement of intellectual capital elements. From the experience of the West and the reality of our country, some incentive methods such

as intellectual capital stock option incentive or limited partnership can be taken into consideration. Secondly, the management system of small and micro enterprise lies in the establishment of a comprehensive system of scientific management system: production management, human resource management, financial management, etc. And it is necessary to establish qualitative and quantitative standards and establish a systematic operation mechanism for constraints, assessment and incentives from the process of production to sales and after-sales service<sup>[3]</sup>.

### ***3.2 Optimize the innovation in the ecological environment of small and micro enterprises***

#### *3.2.1 Innovative management concept*

a) The innovation on humanistic management is necessary. Humanistic management innovation means that the management of small and micro enterprises has changed from traditional "managing affairs" and "managing people" to "motivating people". In order to achieve management innovation, small and micro enterprises must be human-oriented and cultivate the cohesion and centripetal force of employees, make efforts to improve the affinity between employees and enterprises so as to provide employees with opportunities for development and integrate their personal development and enterprise development; Such enterprises should also provide employees with "profit-making" space, and "capitalize" the activated labor. The higher the value created by employees, the greater the profit. Employee stock ownership in small and micro enterprises is the latest development of humanistic management. The stock ownership makes the status, power and economic interests organically combined and unified, and makes the interests of employees and enterprises closely linked.

b) The innovation on knowledge management is important. Small and micro enterprises and large and medium-sized enterprises may have the possibility of equal competition if the core competitiveness of small and micro enterprises change from technology, capital and scale to knowledge. The innovation on knowledge management is to create a behavior environment of knowledge sharing and mutual learning within small and micro enterprises, which can enable the accumulation of internal knowledge and innovate on this basis. Small and micro enterprises can use collective wisdom through knowledge management to improve their adaptability and innovation ability, so that they can make rapid response to external demand, and use the accumulated knowledge resources to predict the development direction and change of external market<sup>[4]</sup>.

#### *3.2.2 Innovative business strategy*

The management strategy of small and micro enterprises can not mechanically imitate the large and

medium-sized enterprises, their strategy should be made according to the advantages and disadvantages of small and micro enterprises, and a unique strategy suitable for small and micro enterprises should then be created. When small and micro enterprises carry out business strategy innovation, they should pay close attention to all aspects of business trends related to small and micro enterprises, actively looking for growth opportunities that can be utilized, and put technology, cost, price, quality and sales into the overall strategy of small and micro enterprises, only in this way can they create good conditions for the future development of small and micro enterprises<sup>[5]</sup>. With the vigorous development of "research and development", small and micro enterprises in Japan since 1990 has also been a typical success. Although this kind of research and development is not large in scale and have few staff, they rely on the control of new technology to continuously develop new products and new markets, and operate successfully. The development of "research and development" has become a new trend of policy orientation in Japan, which is worth learning.

#### *3.2.3 Innovative management methods*

a) Focus on slimming management. In the development process of small and micro enterprises, much attention should be paid to control the formation of useless posts, which means to be slimming and maintain its advantages in management structure.

b) Focus on cultural management. Small and micro enterprises should not only form an enterprise culture of the emphasis on recognizing talents and cultivate them, but also pay attention to knowledge sharing to reduce excessive competition of talents. Small and micro enterprises should let people from different backgrounds work together, so that knowledge in different fields will generate new sparks of thinking in mutual collision. And at the same time, it can reduce the inefficiency caused by excessive competition of similar talents<sup>[3]</sup>. Human resource is the most flexible resource which represents the unique opportunity for small and micro enterprises to make profits. Only by giving full play to the role of human resources, small and micro enterprises can continue to develop.

### ***3.3 Optimize the technology innovation in ecological environment of small and micro enterprises***

#### *3.3.1 Reasonable choice of technological innovation strategic model*

For most small and micro enterprises with limited resources and weak strength, independent innovation is relatively difficult. Therefore the more suitable choice for small and micro enterprises is to carry out imitation innovation. By digesting, absorbing and re-innovating the introduced technology, small and micro enterprises can avoid falling into the technology introduction trap of "introduction

technology -- backward technology -- reintroduction technology -- backward retechnology", so as to gain new technological advantages [5]. From the practice of development in many areas, imitation innovation is a shortcut for the underdeveloped areas to narrow the gap with the developed areas. If small and micro enterprises can correctly implement this innovation strategy, they can accelerate regional technological progress and economic development, even catch up with developed regions in technological level and innovation strength, and gradually embark on the path of independent innovation.

### *3.3.2 Improve the investment proportion and quality of R&D*

Small and micro enterprises need to invest more in R&D because of their low income of new products and low proportion in total income. R&D is an important source of power in the process of technological innovation. It interacts and influences with various relevant factors, and plays a role in technological innovation through its guarantee mechanism. Only through R&D can small and micro enterprises materialize scientific and technological knowledge into new products and equipment, and form or create new production processes and methods. The results of R&D activities, such as new products, new equipment and new processes, can be put into the market in batches only when they enter into production activities.

### *3.3.3 Strengthen personnel quality and innovation team building*

Entrepreneurs generally have acute insight, who can identify and seize opportunities in a complex market environment. They have strong self-confidence and believe in their own feelings, and can independently open up a territory. Small and micro entrepreneurs, especially those own technology-based enterprises, are entrepreneurs with their own achievements. Therefore, they are familiar with the products and markets of their industry and have the capability to use their own professional advantages to carry out innovation activities.

### *3.3.4 Strengthen the construction of innovation platform*

In order to improve the performance of technological innovation, small and micro enterprises must attract more scientific R&D institutions and institutions of higher learning to enter the technological innovation system. They must actively provide the support of talents and information for technological innovation of small and micro enterprises by

giving full play to the advantages of production, learning and research [5]. In other words, the level of internal technology capability of small and micro enterprises and the characteristics of technology, such as the degree of technology diffusion, technology uncertainty, technology concealment, technology complexity and technology accumulation, will have an impact on their technological innovation performance.

## **4. Summary**

The optimization of innovative ecological environment of small and micro enterprises is an method to accelerate the transformation of development mode, adjust and optimize the economic structure. Moreover, it is also an important measure to vigorously implement the strategy of "mass entrepreneurship, mass innovation" and effectively change the functions of the government to build a service-oriented government. What's more, carrying out this work effectively is of great significance to the economic development. In conclusion, on the basis of fully understanding the constraints in the innovation ecological environment of small and micro enterprises, this essay optimizes the innovative ecological environment of small and micro enterprises from three dimensions of innovation in technology, system and management.

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# Critically Compare the Gap Between the Perceptions and Realities of what the Police do

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**Abstract:** There may be gaps between the public's perception and the realities of police work. What the police do is often legendized, heroized by the media. However, the real day-to-day police work is described as "boredom" by most police officers. The public's perception of police work may be misled by the selective report of different media such as newspapers and movies. What is more, the lack of academic research on police work may also be one of the main reasons which contribute to the public's misunderstanding.

**Key words:** police work, public perceptions, media, misunderstanding

When it comes to the police work, most people may think of the plots in crime movies and TV plays such as "Die Hard" series, or the image of fully armoured police officers patrolling on the street. However, the real police work may not be totally the same as what the public has perceived. Didier Fassin (2011: 68), a French anthropologist and sociologist, did an ethnographic study on anti-crime squads in Paris and described police work as "boredom" and very different from expectation and even "the aspirations that led them (police officers) into this profession". Therefore a gap between the perceptions and realities of what the police do may exist in the society. Actually, the content of the whole police work is much more than the part which is displayed to the public. The police assemblage is more like a web yet only a part of it has been widely known by the public. For example, Brodeur (2010: 3) pointed out that "so far, almost all the research devoted to public policing has focussed on uniformed patrols". What is more, Vital (2014: e26) also mentioned that "people's perceptions of police are predominantly shaped by media representations". There may be various reasons contribute to the public's lack of insights into the police's routine activities. Thus, to some extent, it is meaningful to explore the gap between the public's perceptions and the realities of what the police do.

Many people learn about police job from movies or TV screens. From a historical perspective, Paulz and Warnement (2013) noted three different periods of police image shown in the movie. From 1946 to 1965, crime movies tried to convey that "crime does not pay", and police officers rarely used violence. However, the images of police officers in movies started to change from 1966 to 1975. For example, as the movie *Dirty Harry* has reflected, films started to "portrayed

police officers using vigilante justice to curb rampant lawlessness and disorder... These characters are as cold and malevolent as they combat widespread and raging crime", and in the third period, from 1976 to 1990, police were "portrayed in comedic roles or as renegades who can save the day" for example in the movies *Die Hard* and *Beverly Hills Cop* (Paulz and Warnement, 2013: 571). As an artistic way of expression, the realistic police images in movies and TV plays may always be processed artistically, or be infused with the screenwriter's and director's emotions. Therefore, the police images presented to the audience may be different from the real ones sometimes. A large number of movies or TV plays have used exaggeration to make police more heroic. What is more, over heroizing police has been a global phenomenon. Wei (2017) pointed out four types of police shows in China which may be very possible to mislead the public. The first one is the "police deified" type. In this kind of shows, police are nearly almighty and unmatched in any combat against criminals. The second is the "pretty boy" type. This kind of shows does not matter what the reality of police work is, yet the only aim is to make the good-looking actors or actresses swagger to catch the audience's eyes. In the third type of police shows, some police are "corrupted" and work with gangsters or drug dealers, which leaves the public an unreliable impression of police. The fourth type is the most common but misleading, in which the police have extremely advanced technology and superb inferential capability to deal with any kinds of crimes. Arcuri, an American scholar, (1977: 241) did a research on the opinions of police officers towards the police shows. Some police officers interviewed pointed out that "too many shows show the cop as superman" and "there is too much glory and excitement. Police work is at

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best humdrum.... There is a lot more time spent working up average cases than running around trying to arrest criminals". Therefore, police movies or TV shows sometimes are made either too dramatic or too legendized, which may be probably to mislead the public perceptions of police work. Bonifacio (2013: 27) also mentioned that in some movies or on television, "the police hero is given what seems to be superhuman strength, intelligence, courage and deductive skills". However, not all of the police works on screen are exaggerated. There are also many film and TV shows which describe police works very authentically and do help more people learn about what life is like to be a police officer. For example, a small proportion of the police officers in Arcuri's (1997: 241) research stated that some TV shows such as *Adam 12* "portrayed the 'human side of a policeman — compassion, courage, depression, and disgust'", which is quite close to the reality. Some other shows also present the average police work such as solving family argument and finding lost family members or pets etc. Thus, police work may be presented variously on screen and sometimes help but mostly mislead the public into learning about the reality of police work. Movies and TV plays about the police should try to present more the daily work of grassroots police officers in a realistic and positive way, rather than making up nonsense to attract more attention from the public.

In addition to movies and TV shows, people may also gain considerable information on police work from the official website of police authorities, governmental propaganda and media such as Newspaper. Chermak and Weiss (2005: 501) pointed out that the news media, as "a key mechanism of public accountability", "are one external actor that penetrates government bureaucracy regularly". The media is like a window so that the public can observe the real job of police through it. However, sometimes the media selectively report the details of the incident that the police are dealing with and may easily confuse or mislead the public's opinions towards the police. For example, cases of police officers shooting young black man dead in the United States were reported frequently in recent years. The Moore et al (2016: 254) pointed out that "police shootings of young Black males that ultimately result in their death have become an all too common occurrence in this country.... The chances of a young Black male being killed by police are 21 times greater than their White counterpart". The media had shaped police officers into a brutal, unjust and racist image. These negative news aroused the public's anger and prompted several large-scale protest marches. However, Hall et al (2016: 175) mentioned that it is inappropriate to "conflate law enforcement's and racists' motivations" because some observers may not understand the incident's context and the negative reviews of the police may "create and/or reinforce

adversarial tensions between police officers and communities". What is more, CNN (2018) reported that "between 2005 and April 2017, 80 officers had been arrested on murder or manslaughter charges for on-duty shootings. During that 12-year span, 35% were convicted, while the rest were pending or not convicted". According to the results shown by the criminal justice system, only a proportion of police officers were convicted guilty. Thus, to some extent, the police may not be as unjust as the public has perceived. Sometimes it is the selective report of the media that confuses the public's expectation of the police. Additionally, what the media have reported, for example chasing and arresting criminals, gun fight and dangerous situations, is just a tiny part of the whole police work and rarely happens, yet the media seldom choose the other plain work of the police to report. According to the research conducted by Morin and Mercer (2017), about 13 per cent of the adults interviewed in the United States believe that police fire their weapons more than one time per year and 83 per cent of the adults think police officers have ever fired their guns at least once in the whole career except for training. However, actually, the result of their research showed that "only about a quarter (27%) of all officers say they have ever fired their service weapon while on the job". Therefore, the media's selective report of police work may be one of the root causes of the gap between people's perceptions and what the police do.

Other than the exaggerated or incomprehensive images of police which are shown in movies, TV shows or News, the lack of academic research may also be one of the reasons that people perceive police work wrongly. There are both external and internal factors that contribute to the lack of policing research. The external reason is that researchers are restricted by bureaucratism sometimes. As Fassin (2011: 13) mentioned at the beginning of his book, "with very rare exceptions, any request for field study with any section of the police is either immediately refused or referred to a higher authority, up as far as the central directorate of the Ministry of the Interior". He also stated that law enforcement in many countries can avoid external scrutiny more easily than any other institution because "secrecy among the police stands as a shield against the attacks of the outside world; against bad newspaper publicity which would make the police lose respect" (Westley, 1956: 256). What is more, Brodeur (2010) also pointed out that existing research has focused too much on uniformed patrols yet there is big neglect of studying criminal investigation. There are different types and functions of police jobs. All the departments of police cooperate with each other which form a policing network. For example, there are different types of police working specifically for patrol, crime scene investigation, intelligence, cybercrime, countering terrorism, detective, dealing with

drug offence and illegal fishing etc. Furthermore, the policing networks in different countries are also diverse. For instance, according to the Ministry of Public Security of the People's Republic of China, prison officers are classified as police and the job as a fire fighter belongs to both military and the police, which is very different from the policing web in the United Kingdom. There are many specific kinds of police work that the public has never perceived nor have scholars researched. Moreover, police work's experience and intensity are also various from different places and different sizes of cities, yet researchers have paid much more attention to major cities than smaller cities or rural area because of the sample size (Hinkle et al, 2013). Statistics of Weisheit et al's (2006) research showed that bigger cities have a higher rate of homicides using guns than smaller cities. Police works in rural areas or small towns may be easier and less intense than urban area because of the lower crime rate. Many people perceived that police work is intense, however in some place police work are easier than they have thought. Thus, the lack of academic research and media publicity may be one of the root causes of neglecting of specific types of police work and in different areas.

As has mentioned above, the public's perception of what the police do may be misled by either movies and shows on the silver screen, or the incomplete report by the media. The lack of research also contributes to the false understanding of police work. Therefore, to bridge the gap between the perceptions and realities of what the police do is necessary. Firstly, to make more people know about what the police do, a vital approach may be ensuring the high police visibility so that the public will be able to see police work directly instead of learning it from the secondary data such as the media's report or movies or TV shows. What is more, H. M. Inspectorate of Constabulary (2002: 15) reported the advantages of police visibility that can be "consistently expressed as key factors in addressing the need for increased public reassurance. Essentially, a visible police presence was thought to allow for greater police engagement across communities with the expected outcome being a reduction in crime". HMIC also mentioned that the main too of police visibility is patrol. However, in order to help the public know police work more comprehensively, some other approaches can also be adopted. For example, police officers can always wear body worn cameras during work and share the recorded videos with the public regularly. Ariel et al's (2015: 531) research showed that the body worn cameras can "reduce the prevalence of use-of-force by the police as well as the incidence of citizens' complaints against the police". Therefore, it may also be an effective approach to reduce the risk of similar incidents that police being racist and shoot minor ethnic people happening. The second solution is to

provide more access for scholars doing research on police work, and encourage them to research more different types of police work. The third solution can be a demand on movie or TV show producers. If the movie or show wants to exaggerate the role of police, it is required to add a statement such as "this is a pure fiction story" or "this movie/show is based on a true story" at the very beginning of the movie or show so that it will not mislead the public's perception of police work.

In conclusion, it is a global phenomenon that police work is perceived falsely by the public and there are several factors that contributed to the public's gap between the perceptions and realities of what the police do. First of all, the images of the police are often heroized or legendarized in the movies or TV plays. Dyer (2002) explain the reason why the movies and TV plays of crime are so popular among people is that those shows on screen satisfied the public's curiosity about the cases such as rape, murder and serial killers. The shows bring the audience to an unknown world which is very different from where they live. Cummins et al (2014: 205) also pointed out that Criminal Justice System is both "familiar and hidden" to the public. "It is familiar in that a large part of daily news and television drama is devoted to it. It is hidden in the sense that, for the majority of the population, they have little, if any, direct contact with the CJS". Law enforcement, as a part of Criminal Justice System, is also given a mysterious colour which people want to explore. However, because of the exaggeration, the movies and TV shows may mislead the public's perception and make that colour even more confusing. Second, the media also shape an extraordinary image of the police work by reporting selectively. The public can hear a lot of news describing how dangerous and intense the situation police officers have experienced, or some negative report that police being unjust and racist shooting young black man to death. Police work can be really dangerous and intense sometimes compared to other jobs (Mayhew, 2001), but mostly it is peaceful, "boring" and not as dramatic as the media have reported, especially in some small cities, sub rural and rural areas. The third factor is that for some reason, academic research on police work sometimes has difficulties in getting permissions of the authorities, which contributes to the lack of people's insight of police work. What is more, most of existing literature of policing is focusing on the patrol work of uniformed police. However, for example, research on criminal investigation is or other types of police work is very limited. Thus, to bridge the gap between the perceptions and realities of what the police do, solutions need to aim at these three main factors. For instance, encourage movie and TV show producers to make their stories about police work closer to the reality, or add opening lines at the beginning to

show the public that it is made up based on true story. With regard to the media, government can encourage them to report more average work of police officers. Grassroots workers also deserve to be praised. Furthermore, police authorities can release videos recorded by body worn cameras to the public to make the police work more transparent. Moreover, providing more access for scholars to research different types of police work can also help the public have more accurate perceptions of what the police do.

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# Discussion on the Present Situation and Countermeasures of College Students' Innovation and Entrepreneurship Guidance

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**Abstract:** To strengthen the guidance of innovation and Entrepreneurship of college students is not only conducive to the growth of college students, but also to help them realize their real life value. In the guidance of innovation and entrepreneurship, college students can enhance their innovation spirit and entrepreneurship awareness, form a correct concept of employment, and master a variety of entrepreneurial skills, so as to improve their practical ability. At present, the development of innovation and entrepreneurship education in Colleges and universities is very fast. The state has also attached great importance to innovation and entrepreneurship education in Colleges and universities, and has issued and implemented a number of policies to encourage innovation and entrepreneurship education, which has also achieved remarkable results. However, there are still many problems to be solved in the process of College Students' innovation and entrepreneurship guidance, which need to be highly valued by all parties. Based on the current situation of university students' innovation and entrepreneurship guidance, this paper puts forward specific and feasible countermeasures.

**Key words:** universities, college students, innovation and entrepreneurship guidance

## Introduction

The promulgation of the general office of the State Council's opinions on deepening the reform of innovation and entrepreneurship education in Colleges and universities marks the rise of innovation and entrepreneurship education to a solid national strategy. China will accelerate the close integration of higher education with science and technology, economy and society, and the cultivation of innovative and entrepreneurial talents with large scale, innovative spirit and the courage to commit to practice, promoting higher education to make new contributions to the construction of China's human resources power. In terms of the current situation of the employment difficulties of college graduates in the contemporary society, colleges and universities need to integrate the challenges and opportunities in the new era to put forward relevant suggestions according to the innovation and entrepreneurship guidance of colleges and universities, and carry out the theme activities related to innovation and entrepreneurship, and thus do well in the innovation and entrepreneurship work of colleges and universities. As far as enterprises are concerned, they will choose excellent ones when they choose college graduates. In this regard, if college graduates want to stand out from the crowd of talents, they need to carry out innovation and entrepreneurship, and gain

advantages in the fierce market competition.

## 1. Significance of university students' innovation and entrepreneurship guidance

At present, China's higher education is increasingly changing to the direction of "mass entrepreneurship and innovation", which is the direction of social development and the direction of the country. For college students, they are full of energy. If college students lose the spirit and ability of innovation and entrepreneurship, then the nation will stagnate. Innovation and entrepreneurship are the most important and important ways to cultivate college students' spirit, consciousness and ability level <sup>[1]</sup>. College students need to combine with the school and their own majors when they are carrying out innovation and entrepreneurship. According to the specific needs, they need to use the contemporary information network technology to integrate the pre class and after class, book knowledge and actual life, so that the cognition, feeling and thinking of college students are closely combined, and the significance of innovation and entrepreneurship is extended to every college student.

In the practice of College Students' innovation and entrepreneurship, teachers need to help college students analyze the current market environment, integrate their own characteristics, and make targeted suggestions for college

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students. For college students who have no goals or entrepreneurial conditions, teachers can't help but analyze, guide and force them to enter the team of innovation and entrepreneurship. For the college students who can carry out innovation and entrepreneurship, teachers need to guide and analyze the work of innovation and entrepreneurship to help college students to achieve results in the process of innovation and entrepreneurship.

The innovation and entrepreneurship education of college students is a systematic project, which is highly related to the innovation and entrepreneurship curriculum system, innovation and entrepreneurship team, innovation and entrepreneurship base construction, innovation and entrepreneurship competition, scientific research, campus culture construction, innovation and entrepreneurship education and practice. The teaching activities of innovation and entrepreneurship provide students with the basis of innovation and entrepreneurship. Colleges and universities carry out education and teaching activities, according to their own characteristics, create innovative and entrepreneurial materials, and smoothly carry out innovative and entrepreneurial education activities. When college students study other courses, such as cultural courses and professional courses, teachers shall infiltrate the material of innovation and entrepreneurship.

## **2. The current situation of university students' innovation and entrepreneurship guidance**

### ***2.1 low level of specialization of teaching staff***

There is a general lack of professional teachers of innovation and entrepreneurship teaching activities in Colleges and universities. Most of the teachers who teach courses lack the practical ability of innovation and entrepreneurship. They are all engaged in idle theorizing and have no practical experience in innovation and entrepreneurship. However, the courses that college students learn are basically theoretical knowledge of innovation and entrepreneurship, and the knowledge of innovation and entrepreneurship practice is very little. University Innovation and entrepreneurship teachers do not carry out professional innovation and entrepreneurship training, so it is difficult to form an excellent team of university innovation and entrepreneurship teachers. The course teachers basically do not combine the curriculum to carry out innovation and entrepreneurship practice activities, and they cannot communicate well with college students, so it is difficult to cultivate excellent students of innovation and entrepreneurship.

### ***2.2 Backward ideas of innovation and entrepreneurship education in Colleges and Universities***

At present, most of the innovation and entrepreneurship

teaching activities in Colleges and universities are still stagnant in career planning competition, entrepreneurship competition, academic planning competition, entrepreneurship competition, innovation and entrepreneurship Internet competition, so that a small number of college students can participate in relevant enterprise learning, enterprise practice, enterprise internship, innovation and entrepreneurship related speech competition, and the innovation and entrepreneurship base for college students with little investment. These have not played out the real significance of innovation and entrepreneurship [2]. Therefore, in the process of College Students' innovation and entrepreneurship guidance, we should first innovate in ideology, ensure to keep up with the pace of the times, and truly achieve the goal of improving college students' innovation and entrepreneurship ability.

### ***2.3 Unmatched courses***

The relevant departments of education and teaching respond to the teaching concept of "mass innovation", setting up courses suitable for contemporary college students according to the industrial transformation proposed by the society and the relevant excellent talents needed by enterprises, help college students avoid risks and unnecessary mistakes in employment and innovation and entrepreneurship, and improve their professional knowledge. We can draw a conclusion from the curriculum and curriculum system of colleges and universities. Colleges and universities do not link the professional needs with the relevant courses. College students learn a lot of theoretical knowledge in daily learning and lack the ability level of practical operation. Therefore, in the face of employment, college students will be in a passive position and can not meet the new requirements of the contemporary society.

### ***2.4 Lack of features and highlights in innovation and Entrepreneurship Education***

For a long time, the innovation and entrepreneurship teaching activities in Colleges and universities are promoted by the state and government departments. The lack of initiative in innovation and entrepreneurship in Colleges and universities will lead to the stagnation of innovation and entrepreneurship teaching work, which is difficult to go further. In addition, the innovation and entrepreneurship teaching activities in China started relatively late, and colleges and universities have little experience in carrying out innovation and entrepreneurship teaching activities, most of which are learning from foreign countries, imitating other schools, implementing government documents, etc. In essence, colleges and universities do not combine the characteristics of innovation and Entrepreneurship with social development, and do not connect with relevant enterprises.

### **3. Countermeasures for developing innovation and entrepreneurship guidance for College Students**

#### ***3.1 Change the concept of innovation and entrepreneurship education as soon as possible***

The success of innovation and entrepreneurship teaching activities in Colleges and universities lies in, first of all, the creation of innovation and entrepreneurship teaching concept. Only by improving the teaching concept of innovation and entrepreneurship, can we mobilize the enthusiasm of college students for innovation and entrepreneurship, cultivate and train the level of innovation and entrepreneurship ability of college students, so as to guide college students to start their own businesses in combination with social resources and improve the level of innovation and entrepreneurship ability, so as to increase their innovation and entrepreneurship ability. Generally speaking, first of all, colleges and universities need to cultivate college students' thinking, ability level and innovation awareness, improve the education and teaching courses of College Students' innovation and entrepreneurship, and carry out innovation and entrepreneurship teaching activities for college students. Secondly, colleges and universities need to combine their own advantages to integrate each system, teaching methods and specific implementation links in the innovation and entrepreneurship link, and combine with professional teaching activities.

#### ***3.2 Strengthen the education of innovation and entrepreneurship practice***

At present, the activities related to innovation and entrepreneurship in Colleges and universities basically include inviting successful entrepreneurs to give speeches, visiting innovation and entrepreneurship bases, organizing college students to practice in relevant enterprises, etc. These practical activities make college students think the cognition of innovation and entrepreneurship is simple and single, but the deep understanding of innovation and entrepreneurship is not in place. In essence, colleges and universities want students to truly carry out innovation and entrepreneurship, accumulate experience, and let students have a substantive understanding of innovation and entrepreneurship, master the law of innovation and entrepreneurship, and understand the essence of innovation and entrepreneurship<sup>[3]</sup>. Colleges and universities have established relevant innovation and entrepreneurship bases and incubation parks, but they have not integrated the awareness training and practical ability of innovation and entrepreneurship well, which makes college students lack of innovation and entrepreneurship ability, with poor results and no benefits, thus affecting the steps of College Students' innovation and entrepreneurship. Therefore, we need to strengthen the construction of innovation and entrepreneurship base and innovation and entrepreneurship

Park, and actively carry out practical activities in line with innovation and entrepreneurship.

#### ***3.3 Optimize the curriculum system of innovation and Entrepreneurship Education***

In order to train talents for innovation and entrepreneurship in Colleges and universities, the relevant courses of innovation and entrepreneurship education should be improved and reformed. The innovation and entrepreneurship curriculum should pay attention to the differentiation of modularity, learning differentiation, practice and regionalization. Modularity refers to the learning of College Students' innovation and entrepreneurship ability level in the process of innovation and entrepreneurship. It modularizes the relevant knowledge learned in school, mainly including the knowledge modularization of thinking ability, self-cultivation, project selection, management and ability level. Learning differentiation is mainly reflected in the differentiation of innovation and entrepreneurship learning design, which can be divided into open courses and innovation and entrepreneurship courses to integrate learning, so as to facilitate teaching activities and ensure teaching quality. In practice, college students need to participate in it in order to accumulate experience and improve their practical operation ability. The design of education and teaching activities in the process of entrepreneurial practice, entrepreneurial competition and practical training ensures that college students get experience and knowledge that they cannot learn in the classroom. Regionalization is mainly reflected in that the curriculum design needs to rely on the actual situation of the region and economic development of the school to design the real environment close to the innovation and entrepreneurship classroom, which can promote the innovation and Entrepreneurship of college students, and also show the effectiveness of the innovation and entrepreneurship education teaching work in Colleges and universities.

#### ***3.4 Accelerate the construction of "innovative" Teachers***

Colleges and universities should carry out training activities related to innovation and entrepreneurship for the current teachers, introduce excellent talents as part-time teachers as far as possible in the current basic conditions, creating a "double teacher" combination of full-time and part-time teachers. First, full-time teachers, a team of full-time teachers with excellent innovation and entrepreneurship and practical operation ability, are the guarantee for colleges and universities to carry out innovation and entrepreneurship education and teaching activities. Colleges and universities should carry out relevant innovation and entrepreneurship training for teachers and

actively encourage teachers and enterprises to carry out scientific research experiments. Second, invite entrepreneurs, model workers and excellent talents to be part-time teachers. Colleges and universities use relevant resources to hire outstanding talents from alumni to give speeches in Colleges and universities, stimulate the thinking ability of college students, mobilize the passion of innovation and Entrepreneurship of college students, and teach them the experience of innovation and entrepreneurship and their own experience [4]. These part-time teachers are very practical, involving all walks of life in the region. They can bring in their own experience accumulation in teaching and combine the theoretical knowledge of books with practical operation experience, giving students a good demonstration role, which can achieve the results that full-time teachers can not achieve.

Conclusion: In a word, with the continuous progress and development of contemporary society, there are many problems in the teaching of innovation and entrepreneurship education in Colleges and universities, such as the lack of professional level of teachers, the lack of pertinence in innovation and entrepreneurship, and the lack of bright spots in innovation and entrepreneurship related courses. Therefore, colleges and universities need to increase the construction of teachers' teams and establish innovative and entrepreneurial teaching concepts. Improve the feasibility of innovation and entrepreneurship education teaching and create a characteristic innovation and entrepreneurship teaching base and a good learning environment for college students, letting them grow healthily as well as realizing their own value. Only in this way can colleges and universities improve the effect of innovation and entrepreneurship guidance for college students, and export more talents for the development

of society and the enhancement of the comprehensive strength of the country.

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# A Study on the Application of Task-Based Teaching Method to the Politics Education in Cultural Courses for English Majors: Taking *A Survey of English-Speaking Countries* as an Example

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**Abstract:** This paper aims to explore the different teaching effects in the course “A Survey of English-Speaking Countries” using two modes in delivering the same lessons, namely “Lecture-Based Method” and “Task-Based Method,” the purpose of which is to analyze and evaluate the attempt to combine Politics education with cultural courses for English majors in college. The questionnaires and quantitative analysis charts used in this research show that Task-Based Method, when combined with Politics education as advocated by President Xi Jinping, exerts significant effects upon students’ learning cultural courses, and can significantly enhance the students’ confidence in their own culture, arouse their further interest in probing cultural phenomena, and promote cultural awareness. The paper also compares and analyses methods used to promote politics education in college classes from such aspects as teacher’s guidance, mission selection, and teacher supervision, and discovers that the combination of politics education and Task-Based Method in English major courses is an effective approach to promote cultural confidence, and consolidate our ideology, and is an important way to fulfill the basic objective of setting high values and cultivating people in college.

**Key words:** Task-Based method, politics education in college classes, cultural courses, cultural confidence

## Introduction

As one of the compulsory courses for English majors in Chinese universities, *A Survey of English-Speaking Countries (SESC)*, like many other cultural courses for English majors, is a key knowledge-oriented course required by the Chinese education authorities. It aims at providing knowledge preparations for cultural and literary courses for English majors in higher grades (The English Division, the Teaching Directory Commission for Foreign Language Majors in Higher Education, 2000). In comparison to other courses for English majors, cultural courses more extensively and profoundly touches upon such knowledge scopes as the target nations’ history, political system, economy, culture, and educational systems, and therefore, serves as a window through which the students can get a glimpse of Western countries’ social systems and their ideology. This fact dictates that such cultural courses as *SESC* can function as an ideal vehicle to conduct politics education to English majors, helping them realize the value of their own culture through deepened comparison. Also, since such courses are customarily taught for only one semester, with demanding

teaching objectives due to its heavy workloads, high level of difficulty, and very limited class hours. Therefore, it should be deemed a task of priority to carry out politics education to these courses, so as to introduce a comparative study approach into the class, while making full use of class hours, enhancing their learning interest and promoting the core value system of their own nation.

Task-Based Language Teaching, or Task Based Method (TBM), was first advocated by N.S. Prabhu in the 1980s, gained rapid development in the following decades. Compared with other teaching methodologies, TBM is characterized by the following distinctive features: triggering the students’ learning motifs with clearly defined tasks; initiating students’ activeness in language learning. Its theoretical foundation is the belief in being “student-centred” and “learning by doing.” TBM has achieved further development based on language acquisition theories and social construction theories.

For years, critics of education has pointed out a tendency among foreign language majors to unreasonably ignore the value of their own culture while exaggerating the superiority of other countries’ cultures related to their majors.

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This is probably due to the dominance of foreign cultural exposure and a comparative lack of Chinese elements in the curriculum for foreign language majors (Liu, 2014).

Cultural courses of foreign language majors are the frontier and the important fortress to adhere to the socialist core value system. As President Xi Jinping pointed out in the Report of 19<sup>th</sup> National Congress, cultural confidence is a more basic, deeper and lasting force in the development of a country and a nation (Xi, 2017). These observations provide a theoretical basis and a goal for the combination of politics education and cultural courses, and offer a new approach to coping with the difficulties in teaching.

### **1.1 Literature Review**

#### *1.1.1 Historical development of TBM*

As a hot spot of theological study in SLA and FLT, TBM aims at achieving balanced development of language and enhancing the effects of foreign language teaching. It started as early as 1980s, with its first major attempt made by Prabhu (1987), who worked on the procedural syllabus, laying foundation for this theory. A task is defined by many researchers (Brown & Yule 1983; Candlin 1989; Nunan 1989; Skehan 1998; Robinson 2001; Kumaravadivelu 2006; Bonilla 2013) as an activity in which meaning is primary.

Nunan (1989) classified task types, and others developed the theory and made it more specifically applicable to various areas of research on FLT, and provided a framework for analysing tasks based on features such as goals, activities, input data, roles, and settings.

By the end of 1990s, scholars like Ellis, Long, and Skehan had concluded that “meaning” and “form”, which had formerly been considered two opposite extremes, were complementary aspects in FLT, and that the effect of language doesn't have to be achieved by the balance between a focus on meaning and a focus on form (Ellis 1994; Long 1991; Nunan 1989; Robinson 2001; Skehan 1998; Spada 1987).

Long made the first major contribution on the application of TBM. He argued that tasks should be chosen according to learner needs, and initiated debate to explore why not all tasks are equally effective, and to devise research techniques for exploring which tasks are more useful (Long & Robinson 1998). Another scholar to make important contributions to TBM was Robinson (2001a), who maintained that tasks should be made at the appropriate level of “difficulty” (Robinson 2001b), which is a precondition for any task work” (Skehan 1998: 134).

Now, empirical researches on TBM have been conducted in such areas of FLT as syllabus setting, self and peer assessment, classroom problem solving, and the basic aspects of English skill training, including listening, speaking, reading and writing, with findings supporting or

contradicting the theoretical assumptions on TBM (Sheen 1994; Markee 1997; Bonilla 2013).

In 2001, China's Ministry of Education clearly stated in the Criteria for English Classes that Foreign Language Teaching should be based on students' interest and life experience, advocating TBM and other communicative and cooperative teaching methods. Chinese schools at various levels have applied TBM in English teaching as well, ranging from kindergartens to colleges. Most TBM researches in China are concerned with its theoretical discussion and (Han 2003; Ma 2003), but the empirical researches on its application in the classroom are limited (Chen & Wu 1998; He & Wang 2003; Xu 2001).

So far, no research has aimed at researching the effects of TBM upon students' learning of knowledge-oriented courses in FLT, or upon their learning attitudes. Nor has any comparative study probed into whether TBM functions in the attempt to combine political education with cultural courses for English majors. As Robinson pointed out, “More studies of the effects of each of these dimensions (of task complexity) on measures of learner production need to be proposed, and motivated, which would contribute much to establishing an empirical basis for decisions about grading and sequencing tasks, as well as to our understanding of the effects of task-based instruction on L2 development.” (2001b)

#### *1.1.2 Status Quo of SESC and Politics teaching in Chinese universities*

At present, SESC is typically taught in Chinese universities in a “teacher-centered”, “lecture-based” approach (Ma & Zhang, 2008), with the purpose of urging the students to memorize knowledge provided to them by teachers or textbooks. Specifically, “lecture-based” teaching mode has the following three defects: 1. with the course degrading into a “vocabulary-centered” course, or 2. a “comprehension-oriented” reading course, or 3. a purely knowledge bank of facts and dates, with the teaching dominating the whole class (Luo, 2004). Whichever form it assumes, such teaching approaches tend to deviate from the principle of cultural education. The student's attention is either distracted away from cultural related thinking, or exhaust themselves trying to memorize too many facts provided by the teacher. Hence, a poor class effect, and rigid class atmosphere (Feng & Zou, 2006). Moreover, under the pressure of memorization, students tend to deprive themselves of any critical thinking about the target country's value system and cultural identity, either burying themselves into total recitation and indiscriminate acceptance, or repelling its cultural value at all. In recent decades, though there have been several attempts on the teaching mode of SESC, such as Luo Jin's “2P Teaching Method” (Luo, 2004)

and Teng Zhaowei's "Task-Driven Teaching Practise" (Teng, 2011), yet such research is still uncommon.

Besides, politics education courses are typically conducted independent of any involvement with other academic courses, and often employ the "teacher-centered" LBLT mode. This teaching mode is naturally ineffective in arousing students' interest in this already non-compulsory course. So far, there has been no research attempts to combine politics education with cultural courses for foreign language majors.

### 1.1.3 The advantages of applying TBM to the politics education cultural courses in cultural courses

So far, TBM has already been applied to various levels of English education in China. As early as 1998, Professor Xia Jimei published the first essay on TBM, elaborating on the introduction and implementation of TBM, and pointing out that TBM can most effectively mobilize students' motivation in their autonomous learning, inspiring them to explore into their studies, and triggering their interest (Xia & Kong, 1998). Within the field of foreign language majors in Chinese higher education, there have already been a number of theoretical and practical explorations of TBM in such basic courses as listening comprehension, oral course, interpretation, reading, and writing. However, for cultural courses like *SESC*, TBM explorations are rare.

Like with cultural courses, the "teacher-centered" mode is not conducive to politics education, due to its theoretical and abstract nature. LBLT tends to deprive students of interest in learning such knowledge, resulting in inactiveness in class and unfavorable learning effects. In addition, if an independent course on politics education is given, due to the irrelevance to students' majors, such courses tend to be neglected by students, and therefore, it would be harder to imperceptibly influence students' moral and aesthetic appreciation level. Hence, its unsatisfactory teaching effect. Considering the memorization-intensive quality of cultural courses and the challenges that politics education is faced with, there are reasons to believe that TBM should be combined with cultural courses for foreign language majors to cope with these problems. This paper aims to take *SESC* as an example, and conduct research on the teaching mode, measures, and effects of combining politics education with cultural courses for English majors using TBM.

### 1.2 Research Objectives

Based on the aforementioned literature, the research aims at making a comparative study to find out whether the combination of TBM and the application of politics education can exert an influence upon the students' achievements and attitudes for *SESC*. If so, how? Specifically, the following three questions will be addressed:

a. Does teaching modes exert a significant influence

upon students' scores for *SESC* with politics education added into the course?

b. Is there a significant difference on the students' attitudes towards politics education and cultural confidence after the experiment?

c. What effective measures can be identified for the application of politics education to cultural courses?

The results of the research tasks will render teachers a deeper understanding of applying TBM to the combination of politics education and cultural courses, including its operability and teaching implications, and will provide empirical support for TBM and probe valuable experiences and practicable measures for the combination of politics education and cultural courses, as well as . In addition, the research can serve as a related reference for applying politics education to other cultural courses for foreign language majors in China.

## 2. Methodology

### 2.1 Participants

This research took two parallel classes of English majors as participants. Altogether 47 students were recruited and their demographic information is as follows:

**Table 1. Demographic Information of Participants**

|              | Beginning of Term<br>(Valid number/Total<br>number) | End of Term (Valid<br>number/Total number) |
|--------------|---|--|
| TBM<br>Class | 21/23   | 21/24                                      |
| LBM<br>Class | 20/23   | 20/21                                      |

This research employed a Pre and Post Test system. To ensure the correspondence of the data, students involved left their names on questionnaires. The tests were done in class at the beginning and end of the semester. Because of students' class attendance, there was some attrition of participants. Therefore, there were a total of 41 valid pieces of data for the total statistics.

To discover possible new phenomena and understand the teaching effects of TBM-based politics education upon cultural courses, this research also interviewed students at various stages of the teaching process.

### 2.2 Instruments

Since this research involves both qualitative and quantitative methods, two self-developed instruments were applied. One is the researcher himself, interviewing, observing and recording students' learning attitudes and teaching effects, hoping to identify effective teaching methods. The other instrument is two self-designed

questionnaires, one of which tests students' attitudes towards the two teaching modes and politics education, consisting of 15 items in Likert 5-point scale (1 representing strongly disagree, and 5 representing strongly agree). These items fall into three dimensions: 5 about students' attitudes towards TBM, 5 about their attitudes towards LBM, and the other 5 towards their interests in learning about Chinese culture and level of cultural self-confidence. All the items were designed according to the related literature. Reliability test indicated a good index for the scale in both the pre-test and the post-test.

**Table 2. Reliability of the Questionnaire (Cronbach  $\alpha$ )**

| Dimensions   | Items        | Beginning of Term | End of Term |
|--|--------------|-------------------|-------------|
| Attitudes towards TBM  | 2,3, 6,8, 10 | 0.931             | 0.919       |
| Attitudes towards LBM  | 4,7,11,13,14 | 0.911             | 0.879       |
| Attitudes towards Cultural Confidence and Learning Interests | 1,5,9,12,15  | 0.927             | 0.916       |

The other tool is a test of students' knowledge of English-speaking countries, which consists of 46 multiple-choice questions. Among them, 28 questions target on students' geography and history knowledge (6 on British Geography; 6 on American Geography; 8 on British History; 8 on American History), 10 questions target on knowledge of U.K. and U.S. politics (5 on British Politics; 5 on American

Politics), while the other 8 aim at their economics, media, and education knowledge (4 on British part; 4 on American part).

The two instruments were implemented at beginning and end of the semester, but the sequence of items were arranged randomly to avoid memory effects.

**2.3 Procedure**

Throughout the whole semester, the author was the teacher of this course for both classes. At the beginning of the semester, the author tested both classes involved and collected the results in students' attitude questionnaire and their scores for the question papers on knowledge about English-speaking countries before the experiment. Then, TBM was employed in Class A for the whole semester, and LBM in Class B. Politics education is practiced in both classes. At the end of the semester (after 18 weeks), the same tests were given to both classes again using the same tools, and the results in students' attitude questionnaire and their scores for the question papers on the knowledge of English-speaking countries were collected. During the semester, the researcher repeated interviewed the students, while observing their learning process, recording their feelings and attitudes towards the application of politics education in this course under both teaching modes, and identified measures favored by most students. Now, the author exemplifies the application of politics education and the differences in the procedures and operation of TBM and LBM in the two classes, using the chapter of "Early British History." (Table III)

**Table 3. A Teaching Example for TBM and LBM**

|                            |  |     |
|----------------------------|--|-----|
| <b>Teaching Objectives</b> | <ul style="list-style-type: none"> <li>● Understanding the Development Context of Human Civilization on the British Isles, Different Races, and Evolution of Languages Spoken</li> <li>● Understanding Major Historical Periods, the Impetus of Social and Historical Evolution, Its Root Cause, Its Immediate Cause</li> <li>● Understanding Major Historical Figures and Important Events in Their Respective Periods</li> <li>● Understanding the Development Process of British Manufacturing Power and Its Causes</li> <li>● A Simultaneous Comparison of the Figures, Events, Periods and Development Level and the Respective Aspects in Contemporary Chinese History, to Arouse Cultural Self-Confidence National Pride. (Politics Education)</li> </ul> |     |
| <b>Class Hours</b>         | Three Class Hours (130 min)  |     |
| <b>Procedures</b>          | TBM  | LBM |



|   |  |  |
|---|--|--|
| 1 | <p>Task Assignment:</p> <ul style="list-style-type: none"> <li>● The teacher randomly divides the class into teams, with two students in each team.</li> <li>● The task for each team is randomly assigned, and is given to students two weeks before. The teacher provides a list of questions as the summary of the chapter to be discussed. (Take this chapter as an example, whose key points are as follows: <i>What are the dividing points for historical periods in British history? What about those for Chinese history? How do you think of the civilization level of early British history? What were the achievements of Alfred the Great? To whom can he be compared in Chinese history? When did Britain officially enter feudalism? What about China? When was the first British peasant uprising? When was China's?</i>)</li> <li>● All assignments involve the horizontal comparison of both countries' historical development, leading students to the understanding of the long-standing and rich source of Chinese civilization, enhancing their cultural self-confidence.</li> </ul> | <p>Prevision Assignment:</p> <p>The teacher assigns prevision homework a week before the class, asking the students to read the text, to note down the difficult parts, and to make preparations for class participation.</p>  |
| 2 | <p>Before-Class Inspection:</p> <ul style="list-style-type: none"> <li>● The teacher requires that the presentation team provide the materials and presentation outline one week in advance, so that the teacher can make suggestions on revision concerning the quality and comprehensiveness of the materials.</li> <li>● In the second week, the team refines their presentation contents.</li> <li>● The teacher assigns prevision homework to the whole class one week in advance.</li> </ul>   | <p>Prevision Check:</p> <ul style="list-style-type: none"> <li>● The teacher spends 5-8 min checking students' prevision by asking questions.</li> <li>● In this chapter, the questions are: <i>How do you think of the civilization level of early British history? What were the achievements of Alfred the Great? To whom can he be compared in Chinese history? When did Britain officially enter feudalism? What about China? When was the first British peasant uprising? When was China's?</i></li> </ul> |

|          |   |  |
|----------|---|--|
| <p>3</p> | <p>In-Class Presentation:</p> <ul style="list-style-type: none"> <li>● The team spends 3 min checking the prevision of the whole class by asking their fellow students questions, and then make comments on their answers.</li> <li>● The team spends 30 min presenting their findings to the whole class.</li> <li>● In this chapter, in addition to the basic key points, the team added some other related aspects they were interested in:             <ul style="list-style-type: none"> <li>■ Which country entered feudalism earlier? What does this indicate?</li> <li>■ Based on a horizontal comparison of both countries' early civilization level, which country's ancient civilization was more advanced? Why is China considered one of the four ancient civilizations?</li> <li>■ Whose historical achievements were more significant? Alfred's? Or Martial Emperor of Han Dynasty in China?</li> <li>■ What can be reflected upon the difference in both countries' beginning time of feudalism and its duration? What influences does this difference bring to them?</li> <li>■ How are the slogans for both countries' first peasant uprising similar? What does this indicate?</li> </ul> </li> <li>● Besides the traditional PPT presentation, the team showed to the class some video clips, pictures, and texts they had located from TV series, internet links, and other sources, providing websites and other necessary index information for further research.</li> </ul> | <p>In-Class Instruction:</p> <ul style="list-style-type: none"> <li>● The teacher spends 30 min lecturing the following key knowledge points in this chapter:             <ul style="list-style-type: none"> <li>■ What are the dividing points for historical periods in British history?</li> <li>■ How do you think of the civilization level of early British history?</li> <li>■ What were the historical achievements of Alfred the Great?</li> <li>■ When did Britain officially enter feudalism? How long did it last?</li> <li>■ When was the first British peasant uprising?</li> <li>■ The teacher put forward relative questions to indicate a comparative study of both countries' early history, and encourage students to discuss them. (Politics Education)</li> </ul> </li> </ul> |
| <p>4</p> | <p>In-Class Discussion:</p> <p>The team provide the discussion topic they've prepared to the class: <i>Which made greater contribution to human civilization as a whole? The Four Ancient Chinese Inventions? Or the British Industrial Revolution?</i> This lasted for 7 min.</p>  | <p>Q&amp;A:</p> <ul style="list-style-type: none"> <li>● The teacher answers questions from the students: <i>Why Britain entered feudalism much later than China?</i></li> <li>● The teacher leads the students to deeper thinking about the chapter, and answers further questions from students.</li> <li>● This step lasts 8-10 min.</li> </ul>   |
| <p>5</p> | <p>Teacher's Comments:</p> <ul style="list-style-type: none"> <li>● The teacher spends 10 min commenting on the team's presentation contents, logic, effects, etc., making necessary revisions and corrections if any, and summarizing the key points of the chapter again, so as to further encourage students to compare the key history turning points and representative events in both countries and to search for more materials after class to conduct more in-depth comparison.</li> <li>● Finally, the teacher assigns prevision homework for the next class.</li> </ul>   | <p>Homework Assignment:</p> <p>The teacher summarizes the key points in this chapter and assigns prevision homework for the next class.</p>  |

To better combine politics education with TBM and achieve favorable effects, the research was conducted in the following ways:

a. Giving students autonomy in choosing their presentation forms

As long as students fulfill basic requirements of the teacher, they are allowed to elaborate on an aspect that interests them. They can also employ flexible presentation formats. But they have to present an outline a week in advance, and show the teacher their preliminary progress.

b. Pre-Inspection on the part of the teacher

The teacher must meet the presentation group one week in advance, to inspect their preparations, supervise their outlines and give revision directions. This is also a time to answer students' questions, help them overcome difficulties, and encourage them to become experts on the specific topic. Meanwhile, the teacher can suggest some political education elements into their presentations and check on their views.

c. The teacher encourages students to introduce to their presentation some comparative studies between Chinese and Western culture

In the inspection stage, the teacher should warn against possible unreasonable inclination to the favor of western culture by reminding the presentation group of comparing with their own culture, using time as a horizontal frame of reference and development mode as a vertical one, so as to foster a comprehensive understanding of cultural development both home and abroad, enhancing cultural awareness to both countries and cultural self-confidence.

d. The teacher suggests some tasks related to politics education according to the characteristics of various chapters In Geography Chapter, a comparative study of China's and Britain's landmass, population, location, and mineral resources is suggested, to promote students national confidence.

In History Chapter, the starting time of both countries' civilization, and their early contributions to mankind.

In Politics Chapter, a comparative study between British political thinkers and those in China's Spring and Autumn Period, examining their time periods, helping students realize the ancient originality of China's political views.

In Economy Chapter, the teacher encourages students to search for statistics showing the growth of both countries' GDP and comprehensive power before and since the Open Door and Reform Policy, encouraging them to conduct thinking about the function of different economic and social systems and explore the reasons behind numbers.

In Education Chapter, a comparative study between British and Chinese education system, understanding both countries' compulsory education, and discussing what it takes for both to implement compulsory education.

#### ***2.4 A Contrast of Presentation Effects Based on Interviews and Observation***

a. TBM presentations turned out to be more clearly targeted than the teacher's lecturing.

This is because, compared with the teacher, the presentation group have a similar learning background and knowledge level to their audience. Therefore, their prediction of key points in the learning process tends to be more accurate than the teacher's, resulting in a more efficient coping with most students' difficulties in learning. Hence, a higher level of concentration from the audience is both observed and reported during and after class.

b. The audience's interest level is significantly promoted by the effective reply to audience's questions during Q&A stage Through interviews, the researcher discovered that the audience expressed admiration for the presentation group's question setting, as well as the presenters' reply to their questions concerning the comparative study of both cultures. Their national pride for their own history and culture has also been promoted, and many showed interest in furthering this comparative study.

### **3. Results and Discussion**

#### ***3.1 Situation before the Experiment***

To ensure the same initial state in both experimented classes, the author tested students' learning attitudes and their Geography, History, and Politics knowledge before the experiment. The two classes showed no significant difference in their general knowledge or in their learning attitudes before the test.

#### ***3.2 Results of End-Term Knowledge Tests and Analysis***

After comparing initial state and end-term results on general knowledge, it is discovered that at the beginning of term, the two classes showed no significant differences in their general knowledge. And at the end of the semester, both classes improved significantly in their history knowledge tests. However, in Geography, History, and Media Chapters, TBM class exhibited a significantly higher improvement (47.3%) than their LBM class counterparts (26.2%). In Politics Chapter, however, LBM class improved more significantly, with an increase of 36.9%, compared with an increase of 12.7% on the part of TBM class. In Economy and Education Chapters, no significant difference is observed between TBM and LBM classes, 21.4% and 21.6% respectively. This might be due to the limited level of students' life perception ability at this age, as well as their presentation skills. For history, geography, and media knowledge, students are able to locate a large amount of materials for both Chinese and British aspects. The effective comparison between two nations further inspired their interest of research for TBM students, and stimulated them to

conduct more comprehensive research on these aspects than their LBM counterparts. However, for Politics chapter, students of this age are less likely to be interested in such abstract knowledge as government organization. Therefore, this chapter turned out to be too difficult for students' independent presentations in TBM class. The presentation group could also feel the less successful classroom effects and feedback from their audience, which discouraged them to explore further in this field, undermining their interest and learning effects. The comparative ease to locate information in History, Geography, and Media chapters on both countries obviously facilitated a comparative study between the two countries, making it easier for the presenters to feel cultural self-confidence after a careful comparison and convey such emotions to the audience, which explains why the end-term results in these chapters are significantly higher than in LBM class. Similarly, TBM class students also reported a significantly higher level of cultural confidence towards their own country. Comparatively, due to the relatively higher demand for English proficiency and the nature of inner logic in the Politics chapter, LBM students were able to more accurately grasp its contents with the teachers clear illustration, which explains the higher results of LBM class in this chapter compared with that of their TBM counterparts. This has also been confirmed through after-class interviews of students from both classes. However, for the overall score of the course, TBM class performed slightly better than LBM class.

### 3.3 Results on Students' Attitudes towards TBM and Politics Education under Different Teaching Modes

Results on end-term attitudes show a marked difference in the students' attitudes towards politics education under different teaching modes. The TBM Class reported significantly higher level of satisfaction and interest than LBM class in the combination of Chinese element and British knowledge in *SESC*. In TBM class, 92% of the students reported increased interest in such a teaching mode, contributing an average 26% increase in total class satisfaction, while only 61% of students in LBM class reported favorably. TBM students also responded more favorably for TBM teaching mode, saying that such a mode enhanced their interest in finding more about their own country's culture and historical heritage. In contrast, LBM students didn't show obvious preference to either of the two teaching modes. The split attitudes towards TBM and LBM in LBM class seem to indicate the ineffectiveness of LBM mode in arousing students interest in the teaching mode itself.

It is clearly shown that once students have tried Task-Solving activities, their attitudes towards tasks would change. However, as for teachers' lecturing, students'

attitudes remained stable. Therefore, we can conclude that students are quite sensitive to TBM and much less sensitive to LBM.

The research also shows that the end-term results for both classes on politics education in the course have both significantly improved. But TBM class exhibited a more significant improvement. This proves the popularity of politics education characterized by the comparative study of both countries' cultural backgrounds, with TBM class exhibiting a more active response to such a combination with politics education. The after-class interviews indicated that since, in TBM class, all questions concerning China's cultural and historical elements were raised by their fellow students, the audience are more prone to share common feelings for China's advantages in culture and social system. During interviews, 76% of TBM students expressed their increase interest in the comparative approach in their classmates' presentation, and promised a willingness to further such comparative studies after class. The presentation teams also sensed their success from the feedback and response in class, and also expressed willingness to further explore the advantages of China's historical and cultural traditions, hoping to make better performances in the future. LBM class also responded favorably to the comparative approach to politics education is this cultural course. But TBM class scored higher in the attitude questionnaire and made more favorable feedbacks during interviews.

## 4. Conclusion and Revelations

To sum up, in *A Survey of English-Speaking Countries*, both TBM and LBM classes responded favorably to the application of politics education. TBM had comparatively more significant effects on students' learning of geography, history and media knowledge; LBM had more significant effects in the Politics chapter. Students in the TBM Class responded more positively to the TBM Teaching Mode, but more divergently to the LBM Teaching Mode, while students from the LBM Class responded more positively to the LBM Teaching Mode, but were more divergent in their attitudes towards the TBM Teaching Mode. Comparatively, TBM exerted more positive influence upon the students' overall performance in this course. As an empirical proof, the results supported Long's and Robinson's views on the effects of the level of task complexity and difficulty upon the performance of task completion.

Based on the above findings, the author suggests that the TBM-based politics education be adopted for the teaching of the cultural courses like *SESC*, with the LBM as a assisting approach in certain chapters. As President Xi pointed out, "The history of the development of human society shows that for a nation or a country, the most lasting

and deep-seated force is the core values recognized by the whole society. The core values carry the spiritual pursuit of a nation and a country, and embody the value standard of social judgment of right and wrong (Xi, 2017).” TBM can not only enhance teaching effects in cultural courses, but can significantly promote the awareness of Chinese cultural values and social ethics in the teaching of such courses for foreign language majors, effectively avoiding the tendency of uncritically acceptance of western values among English majors, and cultivating students’ cultural self-confidence based on increased cultural awareness. The research supports TBM to be an effective approach to politics education worthy of further exploration and popularization.

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# Design and Practice of Classroom Teaching Reform from the Perspective of Collaborative Cooperation

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**Abstract:** Teaching activity is a process of mutual interaction between teachers and students. Traditional teaching view, which is only to impart knowledge, has been replaced by the concept of not only impart knowledge, but also pay attention to ability, and to improve the quality of students. The change of teaching concept of "it is always better to teach a person who are hungry to fish than to give him some fish." will inevitably lead to the change of classroom teaching mode. The core idea of collaborative teaching is "self-organized synergistic effect". In the teaching process, teachers and students coordinate with each other, learn from each other, complement each other, improve together, and promote the improvement of teaching quality.

**Key words:** Collaboration; Classroom teaching; Design; Ppractice

## 1. Introduction

With the development of science and technology and the advent of the "Internet +" education era, information technology and education are becoming more and more deeply integrated, and teaching methods, learning methods and interaction modes are changing. The traditional teaching mode of "cramming method of teaching" is not suitable for the new teaching needs and talent training needs. Classroom teaching activity is a process of interaction and cooperation between teachers and students, which requires good cooperation between teachers and students. Students are not only the audience, but also the master of the classroom. Teachers should teach students good learning methods and let them "learn". Collaborative teaching not only embodies the concept of joint cooperation, but also emphasizes the joint planning, implementation, real-time communication, collaborative reflection, sharing feedback and evaluation based on democratic equality and voluntary combination, which is closely related to the "teacher guidance as a supplement, students' autonomous learning as the main" advocated by the university. Therefore, the cooperative classroom teaching mode is an exploration of the reform of the existing classroom teaching mode, which has important practical significance for the realization of

teaching objectives and the improvement of students' learning ability.

## 2. Existing problems

In the current classroom teaching, we often hear some complaints from teachers and students, which also affect the teaching effect. The specific problems are as follows:

### *2.1 The enthusiasm of students to participate in classroom teaching is not high*

In the analysis of students' learning situation, the enthusiasm and initiative of students' participation in learning are generally not high, and there are often late for class, absenteeism and early leave. In the classroom, there are few active questions or teachers' participation in the classroom. There are many "bow headed" and "sleepy" phenomena, which do not form a good classroom learning atmosphere and affect the classroom teaching effect.

### *2.2 Teachers' classroom teaching methods and means are single and lack of new ideas*

Traditional teaching is mainly classroom teaching, and the degree of students' participation is limited. The effect of classroom teaching is closely related to teachers' teaching ability and teaching resources. Teachers do not design and implement classroom teaching effectively. The teaching methods are single and lack of innovation. Although it can be

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carried out in accordance with the teaching plan, the teaching organization and implementation are OK, but the effect is not good, which affects the students' interest and learning desire in this course.

### ***2.3 Classroom teaching objectives are not prominent enough***

In the current teaching management process, the relationship between classroom objectives and teaching concepts is not well implemented, and students learn more from the purpose of passing the examination, without really realizing the cultivation of independent learning ability, interaction ability and exploration ability. Students have fewer opportunities to participate in the classroom, or are unwilling to participate. Teachers don't do enough work in guiding, or they don't do it in place. Some of them ask for teachers, and they don't have a strong sense of responsibility. Based on this, there are often fuzzy and uncertain problems in classroom teaching objectives, teaching ideas and learning motivation.

### ***2.4 The assessment method of the course is single and inflexible***

In the assessment system of this course, it is mainly carried out in the way of combining the usual assessment with the final assessment. The usual assessment mainly cultivates students' ability of independent learning, analysis of problems and application of knowledge. It accounts for only 20% of the comprehensive score of the course, while the final assessment is a closed book examination, accounting for 80% of the total. Therefore, there are many contents to be memorized by the examinees. In this way, students will not participate in the classroom teaching at ordinary times and make a surprise attack near the exam, which is easy to cause problems such as insufficient connection of classroom teaching, assessment at ordinary times and final assessment, and insufficient supervision of students' process learning. In addition, the form of closed book examination is relatively simple, which is easy to lead to a low pass rate.

### ***2.5 Too much emphasis on the theoretical, systematic and practical aspects of the teaching content***

The existing classroom teaching of the principles of international trade is mainly theoretical teaching, so that students can understand and master the basic knowledge of international trade, and assist some limited cases. However, international trade places great emphasis on students' practical ability, but due to the limitations of other factors, student lacks the

experience of practical experience, which is not conducive to their ability cultivation, and also urgently needs to make some changes and adjustments in classroom teaching.

Therefore, the cooperative classroom teaching mode can be used to change and try the existing classroom teaching mode: firstly, it can promote teachers to better understand and master the classroom teaching rules, and effectively organize teaching activities. Secondly, it can improve students' participation in classroom learning, improve their interest in learning, and train their practical ability and cooperation ability. Third, we can explore the path and method of classroom teaching reform for students to improve the quality of classroom teaching.

## **3. Design ideas and Practice**

In the pre class cooperation, the teacher arranges the task, decomposes the general task of classroom teaching, and the team members cooperate to complete it. In class collaboration, teachers and students work together to complete teaching tasks such as problem discussion, case analysis, practices and scenario simulation. In the after-school collaboration, for some unsolved problems or extended problems, or problems that need to be completed after class, we will make further discussion in the after-school teams, and provide real-time and non-real-time guidance with the help of some network media, such as QQ group, we chat group, course forum, etc., so as to assist students and their teams to complete teaching tasks. At the same time, the teacher should summarize every time after class, in order to better implement the completion of collaborative classroom teaching, improve the participation and enthusiasm of students.

In the assessment stage of collaborative classroom teaching mode, the completion of each collaborative classroom teaching is combined with the usual assessment and final assessment, and the evaluation and scoring are conducted according to each completion, so as to promote students' independent learning and collaborative learning.

The quality evaluation of cooperative classroom teaching mode: This paper discusses the construction of the evaluation system of cooperative classroom teaching quality management, the construction of quality characteristics evaluation model, the inspection and discovery of problems in each link, and the feedback of these information to the initial teaching design and preparation stage, so that



classroom teaching can be continuously improved and perfected.

Therefore, in the second chapter of the principles of international trade, international division of labor and world market, students are arranged in the QQ group of the class in advance, in which Adam Smith's theory of absolute advantage and David Ricardo's theory of comparative advantage in the classical theory of international trade are required to be mainly previewed; thinking questions are arranged and divided into three study groups according to the student number, each group of about 7 people. Members of the group have relatively clear division of labor: team leader, recorder, inspector, summary reporter, etc. Each group will arrange a group leader to be responsible for the group activities.

### ***3.1 Cooperation before class***

According to the needs of classroom teaching, the learning task (including preparation work) is completed by division of labor and cooperation before class. The total task is divided into several sub tasks, and the members of the group undertake one sub task respectively. Each group leader is responsible for the collection of the tasks of the group members, and the learning task of the whole team is completed by summarizing the sub tasks of each member. For example, in order to learn the absolute cost theory and the relative cost theory of certain content, it is necessary to search the data first, so as to collect the relevant data. At this time, the content of the survey can be divided into several items, and each group is responsible for the search, and then the search results of each group are summarized.

### ***3.2 Classroom cooperation***

In class, according to the needs of learning, through group discussion to complete learning tasks together, such as the impact of international division of labor on international trade? And give examples to illustrate this problem. In the process of discussion, the members of the group have both division of labor and cooperation. They can freely express their opinions on the issues, listen to other students carefully, and sometimes debate. In each discussion, members of the group, such as recorder, inspector, organizer (team leader), summary reporter, etc., perform their respective duties.

***3.3 After class cooperation. Problems that are not solved or can be extended will be further discussed by teams after class***

It includes three aspects: first, students focus on the students in the classroom to achieve the goal of

the same group of students to improve together. Second, in order to complete the learning task, the students in the group help each other, the students with poor foundation actively consult the students with good foundation, and the students with good foundation enthusiastically help the students with poor foundation after class discussion type refers to a learning mode in which students cooperate after class according to the needs of learning. Third, in order to understand (or solve) a problem, students need to carry out investigation and research, through division of labor and cooperation to complete the learning task.

### ***3.4 Evaluation and assessment***

According to the performance of each group, evaluate and assess according to the corresponding standards, such as class attendance, participation, cooperation, knowledge mastery, problem-solving, score, etc., give scores to each group member, and include them in the assessment results.

## **4. Conclusion**

Collaborative classroom teaching mode is an exploration and attempt of the reform and innovation of classroom teaching mode. Through research, we can draw some conclusions as follows:

First of all, it can further promote the interaction between teachers and students stimulate the enthusiasm, initiative and exploration spirit of learners. This way of active exploration will be more conducive to the improvement of students' independent learning and innovation ability, the reform and innovation of classroom teaching mode, and the realization of "1 + 1 > 2" collaborative advantage in classroom teaching.

Secondly, cooperative classroom teaching can guide and mobilize the enthusiasm of students' participation. According to Du Wei and Tao Xingzhi's "learning by doing" theory, students' participation in the teaching process will greatly stimulate their learning enthusiasm and creativity, learn to actively explore, implement the concept of open education, take students as the center, cultivate students' independent learning ability, cooperation ability, exploration spirit, practical ability and professional quality, and improve their interest.

Third, it is conducive to the promotion and extension of teaching. Zhejiang Radio and Television University is a system, with a good and effective classroom teaching mode, which can be spread and promoted in the system and extend the cooperative

classroom teaching reform. By using the online distance teaching platform, we can give full play to the teachers who teach the same course in Zhejiang Radio and Television University, cooperate in lesson preparation and teaching, integrate and optimize the teaching staff, alleviating the problems of insufficient teachers and teaching resources. At the same time, we can give full play to the advantages of the system, strengthen the connection of the system and promote the construction of the system.

Fourth, it is conducive to the realization of the concept of collaborative education in classroom practice teaching. Open education emphasizes students' self-study and teachers' guidance. To give full play to the initiative of learning, in collaborative classroom teaching, through organic cooperation, teachers, students and resources can be closely combined to form a systematic learning support service system, which is conducive to the realization of the positive interaction of teachers, students and resources, and to play the advantages and effects of collaborative cooperation.

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# Teaching Reform and Exploration of Medical Histology Under the Internet Mode

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**Abstract:** Histology and embryology is an important basic course of medical specialty, including histology and embryology, which belongs to morphology. It studies the morphogenesis and development of tissue and cell related to human physiological function. In recent years, with the continuous updating of modern education concepts and the development of Internet and big data technology, the teaching forms of histology and embryology have been diversified and scientific. Under the background of the deep integration of Internet and education, it is an inevitable trend to introduce modern information technology into the teaching of medical histology. This paper mainly discusses the reform and exploration of medical histology teaching under the Internet mode, which is a beneficial attempt to improve the teaching quality.

**Key words:** internet model, histology, teaching reform

## Introduction

Histology and embryology is an important bridge course, which plays a key role in the process of medical learning. It is a basic course for almost all medical students. Blended teaching based on "Internet +" is a new teaching reform mode widely used in recent years, [1-3]. The emphasis is on "student-centered", which combines the direct advantages of traditional teachers' classroom teaching with the convenience of offline students' self-study under the background of information network technology through "online" autonomous learning and "offline" hybrid teaching, providing a feasible way to explore the organizational teaching reform. This paper will discuss the application of Hybrid Teaching in the teaching reform of histology. Under the mode of "education + Internet", how to make the traditional courses of histology and Embryology produce new vitality is not only a new subject worthy of study in our university but also in the reform of higher education in Jilin Province.

## 1. An analysis of the current situation of histology and Embryology Teaching

Histology and embryology is an important basic compulsory course in medical colleges. Under the traditional teaching mode, because many contents of histology and embryology are very abstract, students often have a little knowledge of knowledge points. In addition, there is a lack

of after-school communication between teachers and students, students' problems cannot be solved in time, which ultimately affects students' enthusiasm for learning and the grasp of the whole learning idea. At present, the teaching mode of small class is a new reform of the teaching mode of histology and embryology. It breaks the original model of theoretical teaching with large class as the unit and small class teaching experiment class after a period of time. In this way, experimental teaching and theoretical teaching can be integrated, and the mastery of theoretical knowledge can be deepened. But the main position of students is not outstanding, and teachers are the core. In the short experiment class, we should understand the theoretical knowledge, understand the section specimen under the microscope, and complete the experiment report. It is difficult to ensure that students have enough time to digest knowledge, which leads to the obvious decline in the quality of experimental reports, which is the biggest weakness of the traditional teaching mode. With the improvement and application of network technology and the continuous study of educational theory, the teaching mode of fully sharing resources under the network environment arises at the historic moment. "Internet +" has brought new opportunities for educational reform.

## 2. Application of teaching mode reform based on "Internet +"

### 2.1 improve the teaching quality of Teachers

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Teachers' professional quality and teaching level are the premise of improving the quality of classroom teaching. Teachers not only need to master rich professional basic knowledge, but also have certain teaching skills. The teacher must read the textbook repeatedly, study hard, fully understand the textbook, speak vividly and clearly in class, cooperate with expressions and gestures to stimulate students' interest in learning, and the young teacher can give a formal lecture only after passing the trial lecture before class. At least once a week, organize collective lesson preparation, discuss the difficult problems encountered in the textbook, and exchange some new technologies and new progress of the discipline research. In addition, organize teachers to listen to each other from time to time and exchange teaching methods and experience. These measures have effectively improved the teaching and professional knowledge level of teachers, significantly improved and improved the quality of teaching, and better stimulated the desire of students to actively learn and explore medical knowledge.

### ***2.2 Construction of network simulation experiment teaching platform***

In the experimental teaching of medical histology, students usually need to use various specimens and slices to learn the theoretical knowledge of histology. However, due to the limited number of specimens and sections, the effect of experimental teaching has not been highlighted. Through the construction of network simulation experiment teaching platform, the introduction of micro interactive system, and the establishment of a digital slice network system to supplement the number of traditional slices. The system of digital section library includes gross pathological specimens, pathological slices and histological slices, all of which come from real specimens and slices. Students can operate and use them like operating microscopes, and can use their spare time to study on the Internet. And can carry on independent preview and review after class, use interactive system to communicate with teachers and other students effectively. The use of digital slices is particularly suitable for the current popular "interdisciplinary integration, subsystem module teaching" mode, which facilitates seamless docking between histology and other disciplines, and facilitates interdisciplinary resource integration [4]. In addition, teachers can also use the micro interactive system to carry out the corresponding clinical case teaching of histology, which can not only enrich the theoretical basis of students, but also create favorable conditions for students to participate in clinical practice.

### ***2.3 Flipped Classroom***

As a new teaching organization, flipped classroom has completely changed the traditional teaching mode. By using

the flipped classroom teaching method, the positions between teachers and students are exchanged, so that students become the main speaker and teachers become the guide. In the teaching of histology and embryology, students are familiar with the knowledge, and the preparation before class is easy to carry out. Around the teaching tasks of this course, provide pre class teaching materials, arrange tasks one week before class, and students are divided into groups to facilitate discussion and exchange in extra-curricular time. Pay attention to the division of labor and cooperation in literature inquiry, PPT production, classroom report, etc. Randomly select group leaders to report and teach, and discuss with each other within the group and components, the mode of interaction between teachers and students. Teachers give the initiative to students, learn to interact, guide students to think, and activate the classroom learning atmosphere. Finally, teachers collect information from each group, report and teach. In view of the problems existing in the experimental teaching, we should formulate and rectify the teaching links, modify and perfect the teaching courseware, and realize the maximum optimization of the experimental teaching of histology.

### ***2.4 Carry out experiment skill competition***

Practical teaching activities, such as teaching competition, can not only stimulate students' interest in learning, let them experience the fun in the competition, feel the satisfaction of success, enhance their participation in teaching, but also help to cultivate their innovation ability. The joining of Internet makes the form and content of histology experiment teaching more colorful. In the actual teaching, teachers can use the modern information technology with Internet as the carrier to carry out the experiment skill competition, and take the use of microscope, the use of relevant drawing software to draw specific organizational structure, the production of tissue specimens and slices as the main content of the competition, to investigate the theoretical and practical ability of students. Moreover, through participating in all kinds of competitions, students enjoy the joy of obtaining results, which is helpful for students to improve their knowledge.

### ***2.5 Constructing the evaluation system of experimental teaching***

Teaching evaluation is one of the components of the teaching process, and it is an important means to test the teaching effect of teachers and the mastery of knowledge by students [5,6]. Histology and embryology is the first basic medical course for freshmen. It is difficult for students to master because of its many knowledge points, scattered and unsystematic. In the past, the evaluation method of histology and Embryology in our school was mainly the summative evaluation, which was too single, easily led to students'

sudden learning before the examination, and their understanding and mastery of knowledge were not in-depth. With the acceleration of science and technology, network technology has been unprecedented development, which has brought great changes to higher education and even the teaching process of colleges and universities. Many educators insist that it is imperative to combine computer network with classroom teaching plan. Therefore, American scholars put forward the concept of formative assessment. Formative evaluation mode refers to a kind of teaching activity in which students participate in teaching and understand teachers' timely feedback on their performance. It is an all-round evaluation of students' ability by various forms of evaluation measures, so as to promote self-learning. It also enables teachers to have a more detailed understanding of each student, which is the feedback of teaching process. It is found that this mechanism can stimulate students' interest in learning, promote the interaction between teachers and students, and constantly improve the quality of teaching. The "Internet +" formative assessment model can significantly improve students' final written examination results and comprehensive results, and is a new exploration in histology and embryology teaching. In the future, it is necessary to continue to practice and improve, so that the evaluation mode can be better combined with histology and embryology teaching, so as to promote the teaching reform of the course.

### 3. Conclusions

In a word, the teaching reform of histology under the Internet mode has greatly enriched the teaching content and means, widened the teaching channels. Higher medical education shoulders the mission of training higher medical talents and developing medical science and technology, and

has accumulated many effective teaching methods in the process of teaching and research of histology. With the development of society, the demand for medical education is higher and higher. The reform of teaching mode needs to be explored, perfected and improved in teaching practice. Only by exploring better and newer teaching methods with the joint efforts of teachers and students can we adapt to the development of medicine and cultivate more excellent medical talents.

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# The Reform and Innovation of Modern Physics Experiment Teaching

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**Abstract:** Modern physics experiment, as an important part of physics experiment teaching, plays an important role in cultivating students' ability of integrating theory with practice, innovation and scientific research. However, there are many problems in the process of modern physical experiment teaching, which have a certain impact on the teaching effect. This paper analyzes the problems existing in modern physics teaching practice, and puts forward reform ideas and plans in teaching content, teaching mode and teaching methods.

**Key words:** modern physics experiment, teaching reform, teaching mode

## Introduction

Experiment teaching is a very important teaching link to cultivate students' exploration spirit, practical ability and innovative thinking. Modern physics experiment is a professional basic course for physics majors. This course, especially a collection of multi field physics basic knowledge, is comprehensive and innovative. This requires teachers to abandon the traditional teaching in the teaching process, and actively carry out teaching reform and exploration innovation in modern physics experiments. This can not only improve the teaching effect, but also play an important role in the cultivation of students' ability.

## 1. Problems in modern physics experiment teaching

### 1.1 Disjointed content arrangement

In the course of modern physics experiment, it covers all the fields of physics development and has a strong specialty. Before the experiment teaching, students need to have a better understanding of the basic theoretical knowledge. Most of the experimental contents in modern physics experiments belong to the classical experiments involved in the process of basic knowledge learning of physics major. One of the main purposes of experimental teaching is to enable students to have a clearer understanding of the basic theoretical knowledge of the major and to effectively improve the experimental operation ability of students. However, in the process of modern physics experiment teaching, the content of experiment teaching and the content of basic theory teaching cannot achieve mutual correspondence. Even some theoretical courses lag behind the corresponding experimental teaching content, which leads to different degrees

of disconnection between experimental teaching and theoretical teaching. The result of this phenomenon is that students have to carry out corresponding subject experiments on the premise that they have not yet effectively studied the basic knowledge. In the experiment process, students cannot effectively understand the principles of modern physics experiments, just simply follow the instructions of the experimental teachers to complete the corresponding steps, and finish the experiment.

### 1.2 Single teaching mode and method

Experiments carried out in the course of modern physics experiments are some of the most famous experiments in modern physics, some of which belong to the experiments of Nobel Prize winners, which involve a large number of more in-depth physical theoretical knowledge, which puts forward higher requirements for physical experiment teachers. Physical experiment teachers should not only have the ability of experiment guidance, but also have a good grasp of the basic theoretical knowledge of physics. They can clearly introduce and explain the experiment principle to students, so that students' Physical Thoughts and experimental ability can be improved to a certain extent. However, from the actual teaching situation of modern physics experiment course in our school, there are still two outstanding problems as follows. One is that the teachers of modern physics experiment teaching need to teach and guide different experiments at the same time, which results in that the experiment teachers do not have enough time in the process of teaching experiment principles and contents, just a brief description of the experiment steps and purposes. This leads to students can not have a clear understanding of the purpose and steps of the experiment, can only follow the steps of the teacher's instructions to carry out the experiment, can not think about the experiment process, which seriously hinders the innovation and

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development of students. The second is that some teachers mainly introduce the experimental steps and instrument operation in the process of explaining modern physics experiment, which deviates from the goal of modern physics experiment course to a great extent. The final result is that students can not achieve effective cognition of physics knowledge, and the actual teaching effect is not ideal.

### ***1.3 Limited teaching conditions***

Due to the lack of experimental equipment, the experimental equipment can not meet the needs of teaching. Because the experimental equipment is limited, in the process of experimental teaching, we can only increase the number of cycles or more than one group of people to experiment. In the long run, it will lead to the failure of modern physics experiment teaching to effectively train students' practical operation ability, and also to realize the inquiry and research-oriented learning.

## **2. Countermeasures and measures of modern physics experiment teaching reform**

### ***2.1 Selected teaching content***

For modern physics experiment course, its teaching purpose is mainly to train and cultivate students' ability to observe and analyze physical phenomena, so that students can master the ability to analyze data by using relevant theories. We should be able to get a correct understanding of the development and formation of new physical concepts, cultivate students' rigorous and scientific style, and exercise and cultivate students' innovative awareness and practical ability in the experimental process. According to the above objectives, we can see that in the process of modern physics experiment teaching, it should include the following aspects: atomic physics experiment, laser and optical information experiment, magnetic resonance and solid-state physics experiment.

### ***2.2 The reform of teaching mode***

In the traditional modern physics experiment teaching, all the students complete the same experiment content according to the teacher's arrangement, at the same time, the experiment class hours are fixed, so the course content is restricted to some extent. If students are very interested in some experiments set up in the laboratory, but the laboratory is not open to them, it is bound to reduce the enthusiasm and initiative of students. In this regard, it is necessary to change the single experimental teaching mode at this stage, expand the experimental content and increase the experimental items based on the original experimental content and items, so that students can choose to do their own interested experiments. This can not only complete the corresponding teaching plan, but also meet the individual needs of students for physical experiments. Through the reform of the teaching mode, the experimental content and items have increased to a certain extent, and then the workload of teachers has increased. Through the change of teaching mode, the enthusiasm and initiative of

students' experiment have been fully mobilized, the desire for knowledge has been met, and the knowledge has been expanded to different degrees, which has played a good role in cultivating students' innovation ability.

### ***2.3 Improvement of teaching methods***

In the modern physics teaching experiment, we should change the traditional teaching method of explanation, adopt the new teaching method of heuristic, discussion and interaction, and guide the students to form the learning method of mutual flow and communication. In the process of teaching, we need to give full play to the leading role of teachers, guide students to think actively through heuristic teaching, and explore and practice physical experiments. As the main body of experimental teaching, students gradually change from passive acceptance to active exploration. They can really experience, explore and experiment the physical phenomena. In this process, they can experience the physical thoughts and laws, and finally master the methods applied in physical research. At the same time, in the process of experimental teaching, we should also pay attention to the guidance of students' thinking, from the previous verification experiment to the direction of inquiry experiment, so as to effectively cultivate students' scientific thinking, independent ability and practice level.

### ***2.4 The reform of teaching experiment examination***

In order to realize the scientific evaluation of students' comprehensive ability, we need to reform the final evaluation method of modern physics experiment, change the traditional evaluation method mainly based on experiment report, but adopt the comprehensive evaluation method. The main component of students' total experimental score is changed to normal score, and the total score is obtained by comprehensive calculation of various scores. The total score consists of three main parts, namely, the experimental preview score, the experimental operation score and the experimental report score. The proportion of the three parts in the total score is 10%, 30% and 60%, respectively. The experimental report contains the basic theory, experimental data analysis and conclusions of each modern physical experiment. By this way, students' performance in the experiment process can be comprehensively examined, and the teaching effect of modern physics experiment can be significantly improved.

## **3. Conclusion**

This paper analyzes the teaching problems of modern physics experiment in our school, and takes the corresponding teaching reform measures. Through its practical application, the effect is also ideal. Students are more active in the experimental class, and can creatively solve the experimental problems in the experimental process. At the same time, the reform can effectively arouse the enthusiasm of students, and play a better role in training students' experimental ability, data analysis ability and summary ability.

# Application Trend of Data Management in E-sports

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**Abstract:** With the rapid development of professionalism and portability in recent years, e-sports has been fully reflected in its glamour and value through formalization and industrialization, and good data management is essential for formalization and industrialization. A ring. This paper combines the current situation of e-sports development with the literature and data method, and makes a brief analysis and research on the data management and application trends of e-sports in the current environment, and gives suggestions to promote the formalization and industrialization of e-sports.

**Key words:** data management, e-sports, application trends

## 1. The background of the e-sports industry

E-sports is an activity in the video game competition to achieve the "athletic" level. E-sports is an intellectual confrontation exercise between people using electronic devices as exercise equipment. Starting in 1986, the American ABC channel broadcasts Nintendo game consoles between two children via TV. Until 2018, the world e-sports industry has been growing. On November 18, 2003, the State Sports General Administration officially approved the e-sports as the 99th official sports competition. In 2011, the State Sports General Administration changed the e-sports to the 78th official sports competition. Since e-sports has been officially listed as a national sports event, the domestic e-sports environment has gradually changed from the improper perception of "e-sports = playing games", benefiting from the e-sports mobile game unique to the domestic market, the Chinese people for the entire electronic The recognition of the competitive industry has gradually increased. In recent years, Chinese e-sports players have consistently achieved good results on the world stage, and they have a positive impact on everyone's vision of the e-sports industry and the improvement of the e-sports players' social status. In particular, in 2018, Chinese e-sports players achieved good results in international competitions. When they broke South Korea's long-term monopoly on the industry, the enthusiasm of Chinese people for e-sports reached a new height. The booming development of the e-sports industry has also added new impetus to the operation of the national economy.

## 2. E-sports in the era of big data

The e-sports industry is a huge emerging market, and its benefits and influence to the national economy in the rapid development in recent years cannot be underestimated. E-sports people engaged in the e-sports industry have been mining and developing this industry in recent years, but the traditional e-sports industry has always had a saturated day, and how to re-develop the existing e-sports industry is a New development ideas, the e-sports industry is in urgent need of new e-sports industry derivative content.

The development of the e-sports industry is inseparable from the arrival of the Internet era. Compared with the era of the cassette player, it is also the emergence of personal computers and the development of the Internet. The e-sports industry has ushered in an opportunity for development. The continuous innovation of personal computer hardware configuration has enabled the computer to run and improve its performance and efficiency. More and more competitive software has become popular, and it has become more enjoyable and competitive. The development of the Internet, the emergence of the global village, the interactive experience of users around the world has been continuously enhanced, and the competitiveness of software has also been improved, which has prompted the birth of e-sports competition (Zonghao Li, Bai Li, Jian Wang, 2005). Today, in the era of big data, the e-sports industry is inevitably converging with the era of big data. The big data of e-sports can enable professional players to better analyze the personal and team data with the help of professional e-sports coaches, and better improve the weaknesses. In the market of e-sports

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industry, big data can better analyze the user data of each product in the service industry, so that the ability can better integrate into the market environment and enhance economic benefits. However, big data is not an advantage for the e-economy industry. If the content of the data is changed blindly, relying too much on the information reflected by big data and lacking rational analysis, it may make radical market behavior and produce unwilling consequences. Therefore, big data only provides a reference role. Through big data to understand the market, and reasonable analysis, utilization and management of big data, the correct way to use big data.

### 3. The value of data management for e-sports

The well-known e-sports market research company SuperData gives the 2016 e-sports market an estimated annual revenue of \$1.5 billion. In 2018, SuperData predicted that the annual revenue of the e-sports market will exceed 1 billion US dollars, and the global audience is about 258 million. Another research institution, Newzoo, is expected to be conservative. It is expected to reach \$463 million in 2016. The global e-sports industry will have a profit of about \$470 million in 2017. Just two years later, Newzoo's estimate of global e-sports market revenue in 2018 has nearly doubled compared to 2016, with a fixed price of \$905.6 million and a viewership of 380 million.

Although these reference figures are only predictions of the e-sports market, they truly reflect the rapid development of the e-sports industry. This is also the case, the development of the e-sports industry is undoubtedly an e-sports competition. The great value of data has been continuously tapped through the specialization and quality of e-sports competitions in recent years. Therefore, in today's booming e-sports competition in China, the e-sports industry is indispensable for the management of e-sports data.

Data information management is a normal thing in traditional sports, but it lacks enough attention in e-sports competitions. In July 2015, Wanplus set up a data analysis and competition system when it was first launched, and built a data management platform for various e-sports competitions. The emergence of data solves the need for people to analyze, but its essence is not only to tell people the objective facts, but the role of data is also reflected in objective facts, which can satisfy people's curiosity. For e-sports data, its value lies in the application scenario.

The value of data management in traditional sports is similar to e-sports. Take the data graphs of NBA stars as an example. What people care about is not purely digital analysis. It is by managing these numbers and discovering the sports stories themselves in these athletes, from players to teams, from teams to different. Historical era. E-sports

also have the same logic (Yawei Li, Tian Feng, 2013). With the rapid growth of the e-sports industry, the demand for specialization and professionalization of the e-sports industry has also increased. Although the major e-sports competitions have received investment from various groups in recent years, the commercialization of e-sports data has not been effectively alleviated. Taking the traditional sports industry as a reference, the audience needs the game to provide them with sufficient and detailed game data, while the more professional managers and clubs are more inclined to the athletes' personal data when they need the game data. Conduct analysis and selection of athletes. Therefore, participants in the traditional sports industry, whether it is a club or a league, need to establish a complete data management system to obtain the required data. However, the e-sports industry is still unclear about this business need. The reasons are as follows: First, e-sports software itself can present certain basic data, and second, in the early stage of e-sports development, experience still has a high efficiency advantage compared with scientific data.

Nowadays, many startup companies enter the industry through the management of e-sports data. In addition to the above mentioned Wanplus, in China, there are also Laoyuegou, which has completed the C round of financing, PentaQ and Risewinter. In addition, Dotamax is a major business model with value-added services, game intermodal and e-commerce.

The diversity of data management applications is reflected in the needs of different parts of the club, competition, education and media. The data needs of each part are different, while the demand for clubs and e-sports teams is high. Proportional e-sports data revenue. At the end of 2017, Risewinter and QG Club reached a strategic cooperation agreement, which will provide QG club marketing related data services and management, including fan data analysis, public opinion analysis, sponsor cross data analysis and so on.

After the data is effectively managed, its application is indeed quite a lot, but for the market, the data does not occupy a dominant position in many cases. However, the value of the data is easily reflected in games such as Fantasy and quiz. Take traditional sports as an example. Every four years of the World Cup, bookmakers can use the data of the game to create a lot of economic benefits, even if they do not need to intervene. Similarly, the e-sports industry has a common identity. In the field of e-sports, quiz and gambling are not new words. With nearly 600 million and growing global players every year, e-sports betting is indeed full of temptation. Internationally, famous gambling sites such as William Hill have opened gambling projects for e-sports projects such as DOTA 2 and LOL. With the improvement of

the performance of mobile devices, mobile sports software in the mobile era has begun to be regarded as a development project by betting companies. Although e-sports betting attracts attention, today China is still unable to launch e-sports-related platforms for policy reasons. The rejuvenation of the e-sports industry's audience makes the commercial development of e-sports data in this area limited by policies, and how to guide young people to correctly view the gambling related to the e-economy industry is another topic that needs constant argumentation.

Although the e-sports industry has experienced many years of development, it is still at a relatively early stage until the restrictions. On the one hand, it is reflected in the management of data, in fact, there is still room for refinement and improvement, because the constantly updated e-sports project puts forward higher requirements for the rational management of data. On the other hand, it is the rational use of data management. In addition to making objective analysis and elaboration of the story behind the data, the key to business is to derive more business models. Refer to the e-sports league of traditional sports, for example, in the United States as the most valuable investment e-sports league owl after the NBA, is a successful business model derivative.

#### **4. The current status of data management in the e-sports industry**

The ultimate goal of managing data is to better reflect the nature of the data's services. If it is not used, management and analysis are not meaningful.

At present, most of the clubs in China use the products of the market data analysis company, but the cooperation mode still stays at a very shallow level (Yi He,2017). Most of them are just opening up all the data processing products in their own backstage to the team for a certain return on resources. For example, exclusive interviews, etc., but there is no further in-depth cooperation. As a result of this, both parties have certain responsibilities. The largest data service providers under the current LOL projects, such as Wanplus and PentaQ, do not evaluate their professional level. First of all, their identity is very mixed. Externally, in order to survive, the market demand is more biased towards the media. For the sake of data products, it is a third-party organization that is constantly cooperating with the government. It can also be said to be a CP content service provider. Therefore, when it comes to negotiating cooperation with the club in such a relatively neutral position, there is a lack of specialization. As we all know, capital is always profit-seeking. Data management and analysis is the essence of business for the company. It is too unrealistic to talk about interest only. Therefore, when the company

provides data support to the club, most clubs can only provide money and information. However, the club has no reason to waste money until the data provided supports actual results. However, compared to money, the club provides information with less feasibility. Because the club is so mysterious and closed, it is because its information is easily researched and easily targeted. A team is state-oriented. The state refers to their adaptability in the current version, the team's understanding of the version and the lineup used, the hero pool of the player, and the overall state of the individual. To give an extreme example, after providing the SKT recent training game and the individual single-row data of the players, basically the domestic first-line clubs can increase the chances of defeating them by 30% to 40%. In view of this, the club will certainly not easily disclose such absolute value information to the data service provider. Unless the data service provider is wholly-owned by the club's parent company, the data service provider's guarantee of part of the equity may not be fully trusted. Because any leaks in the game information can be disaster-level, especially in the face of the world stage, in this case, it is difficult for data analysts and clubs to carry out in-depth cooperation, not in the system. It is impossible to get the club's full trust and first-hand resources, which is a difficult obstacle to break through.

In fact, although the talents with the professional data management research ability are gathered in the data service providers, they lack the first-hand data sample, lack of experience with the coaching team of the players, and lack of a comprehensive understanding of this e-sports project. More is one-sided, and its ability in only one aspect is outstanding (Qiuzhou Li,2018). At this point, there are really obstacles that cannot be overcome compared with traditional analysts. The analysts in the domestic first-team clubs, under the current stage of e-sports development, continue the Korean way, relying on experience and personal feelings to draw judgments, data analysis is still at the Excel level, lack of tightness. With the technology of the times, we will give a conclusion that has a certain theoretical basis and can be visualized, let alone build models and systems. Taking LOL as an example, how to quantify the judgment of map resources under a specific version? Is it more valuable to be the first tower or the wilderness at a certain point in time? Should a player's ability be judged by team participation, damage conversion rate or comprehensive evaluation, and which point is higher? It's hard to get an accurate answer, but it's absolutely impossible to get an answer without long-term repeated analysis and application of collaborative data. Therefore, only the products with strong execution from top to bottom and the recognition of their value can be used to understand the status of the player in real time by drawing

conclusions from the analysis of past game data in the tactical strategy and player status of the first-line team. Continuous observation and communication with the players' coaches can have real effects.

### 5. Development direction of e-sports data management

The development of e-sports data management in the future can have two completely different and different directions (He Gao, Shuang Zhang, 2017).

The first is entertainment. Third-party data service providers will continue to strengthen cooperation with the official, more for the audience, commentators to make more efforts in the visualization and easy to understand, because in fact most of the players understand the game and the information acquisition channels are derived from Interpretation and related media reports, there is still a lot of room for development in data visualization entertainment, especially in real-time expression. Therefore, the most important way to realize the cash is to serve as a data service company for the game producers and publishers, to provide professional services for the event organizers, and of course, there are many upstream and downstream companies. Although the data on gambling also has great potential value, based on China's policy, e-sports gambling is really not good.

The second is specialization. For the club, in the future, there will be a team of coaches who have a high degree of understanding of e-sports projects, and who have professional data processing capabilities or recognize their value to serve the club, develop in the direction of daily training, rate internal players and analyze opponents. Manage and apply data, and even set up a professional data analysis subsidiary to serve all organizations under the group. But to achieve this, it still takes a certain amount of time. The professionalization process requires the club to be more aware of the "achievement is everything", and the world prize pool of various e-sports projects can reach a certain level to further accelerate. Taking LOL as an example, Riot has made a lot of actions in the sustainable development of LOL e-sports ecology in recent years. It is obvious that the team logo and champion skin division are slowly increasing the incentives for world-wide event bonuses and attracting traditional capital. Brand entry strengthens the brand chain effect, the value of the championship ranking, and the club's income ratio is healthier.

### 6. Conclusion

The e-sports industry has experienced many years of development, and now its development is closely integrated with networked informationization as many traditional industries. The e-sports industry in the network era is inseparable from big data, and it is inseparable from data management based on big data analysis. E-sports not only focuses on the online, but also on the offline, and combines with the real economy. Through the management of active user data, the sales channels of active devices are combined with the e-sports industry. Combine and implement online and offline support to realize the e-sports industry's role in the economy. Similarly, data management can promote the professionalization and standardization of the e-sports industry to a certain extent. It is necessary to implement the registration management system of e-sports players by collecting the personal data of e-sports players to promote the healthy development of the e-sports industry. In summary, the development trend of data management in the field of e-sports is not only that the comprehensiveness of data helps to improve the economic benefits of e-sports, but the standardization of data can promote the benign development of e-sports industry. In today's Internet age, e-sports should grasp the development opportunities after collecting and analyzing various kinds of data of various competitions, players and the masses, and how to achieve a balanced development in the two directions of entertainment and specialization. The main theme of today's society is more closely fitting, which is worthy of our consideration.

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# Sufferings and Transcendence in Childhood in *Where the Mountain Meets the Moon*

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**Abstract:** In children's literature suffering is associated with physical and psychological frustrations encountered by children during their childhood. Moreover, children's literature particularly focuses on real life by highlighting children's life, growth, hardship, and happiness. The book *Where the Mountain Meets the Moon* tells the frustrations and sufferings of the protagonist's childhood and shows in detail how the protagonist made efforts to fight against the reality by embarking on the road of searching for wealth, and finally know the essence of happiness.

**Key words:** childhood suffering transcendence

## Introduction

The aim of this paper is to highlight the main childhood agonies faced by Minli in terms of physical and psychological aspects. The analysis of this book is far more relatable to the readers of childhood literature and it shows the real-life situation that many children face. Her physical agonies deepened into more severe emotional hardships such as family issues and an identity crisis. Thus, this story highlights in a very effective manner the various issues that children have to deal with during their childhood and is a far more realistic representation of what many children face rather than the stereotypical childhood literature stories.

Furthermore, the story also shows the actions that Minli undertook to alleviate the hardships faced by her family. Her actions were brave, and her dreams come true in terms of her family wealth. More importantly, her exploration highlighted the change that occurred in her mindset that she realized the essence of happiness.

## 1. Sufferings in Minli's Childhood

Minli has suffered numerous physical pressures and emotional agonies throughout her childhood. These sufferings, which are mainly covered in the first five chapters, serve as the main reasons for her adventure since this is a way for her to erase the sufferings.

### 1.1 Physical Pressures

The first is the extremely low living standard of Minli since the area she lived in was arid and barren. Hence, this was a major reason which induced Minli's sufferings. One typical example is the opening description of the village

where Minli lived in, Grace Lin addresses the area with a special name that shows the main feature through "Crowded in the corner of where Fruitless Mountain and the Jade River met was a village that was a shade of faded brown" (Lin, 2009: 1). Grace Lin pictures a vivid image of the area, colorless and desolate, in the mind of the readers. As its name suggests, nothing can grow on "Fruitless Mountain". This is a place where even animals cannot rest. Grace Lin further presents the undesirable environment for humans to be able to live by saying "To coax rice out of the stubborn land, the fields had to be flooded with water" (Lin, 2009: 1) and "everything in the village had become the dull color of dried mud" (Lin, 2009: 2). The use of "faded brown" and "stubborn land" highlights the color and character of a desert which would remind readers of its lifeless nature. The extremely harsh environment in the area where Minli lived can be taken as the primary sufferings for Minli's childhood. Then, we can assume that Minli's family was not able to provide her with a high living standard. Clues for poverty as being the major physical suffering endured by Minli are depicted. In the first five chapter, the use of the following simile: "a bunch of matches tied with a piece of twine" pertains to the construction of the house and highlights its small size. The adverb "barely", further proves poor family status of Minli.

According to the U.S. census in 2011, there were nearly one-in-four American children growing up in poverty, with higher global averages levels. Hence, this is a widespread issue which needs further exposure within the children's literature arena. Disadvantaged children are far more likely to confront a wide range of physical stressors than those children living in wealthier homes. Likewise, Minli's mother

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shouted that “Our house is bare and our rice hardly fills our bowl...What a poor fortune we have” (Lin, 2009: 10). This emotional reaction by the mother is extremely poignant since the impoverished situation is far too much for even an adult to handle, hence, it must be unbearable on a child, Minli.

In Minli’s childhood, she struggles in physical agonies caused by the harsh environment, impoverishment, and poverty-related issues.

### **2.2 Emotional Agonies**

For Minli, poverty causes her family issues and identity crisis. The main family issue comes from her mother’s negative life attitude. There are apparent symbols that show Minli’s mother’s disappointment with life, and one is especially representative -- “sigh”. The most representative description is in chapter one, “Ma sighs a great deal, an impatient noise usually accompanied with a frown ... Minli could not remember a time when Ma did not sigh” (Lin, 2009: 2). Minli mother’s sigh, along with the frowning and impatience, shows her negative attitude towards their poor situation -- “rough clothes, rundown house, or meagre food”. Due to her negative emotions, she always argues with Minli’s father. Hence, we can see that it is not a family which is constantly associated with laughter, but rather it is one where there are constant disagreements and disappointment. An initial conclusion could be drawn about Minli’s emotional sufferings from maternal distress and parental disagreements.

Having proved the basic emotional agonies of Minli associated with parental distress, it is essential to take a further look at her deep emotional suffering -- her identity crisis. According to Erikson, an identity crisis is a time of intensive analysis and exportation of different ways of looking at oneself (Erikson, 1968). The major culprits for Minli’s identity crisis are the deprived environment and her distressing parents. Minli might suffer identity crisis from staying in reality like her parents or stepping out of her familiarity and comfort zone and pursuing miracles told in stories, which is basically the identity crisis of cowardice or bravery. Her parents made no efforts to combat poverty, which contradicted with her braveness and hope that she gained from the stories she listened to. There is one typical example in chapter four after Minli was scolded and was ready to let go of the goldfish in the river. Grace Lin reminds readers of the influence of Minli’s Mother on her that clouds her further decisions, saying “Minli watched it and sighed. As the sound faded into the night, Minli realized it was an echo of her mother’s impatient, frustrated noise” (Lin, 2009: 27). As we have discussed before, the Mother’s sigh is one of the major symbols of the family issues that signifies a negative attitude towards life and the entity is Minli’s mother, a person who always complains but never tries to change the situation. The “echo” can be regarded as one possible type of

person that Minli was struggling to be -- coward like her mother.

Minli suffered in her children from physical pressures that were poverty-related issues and emotional agonies including family issues and identity crisis.

### **2. Minli’s Awakening amid Sufferings**

On the journey to the Never-Ending Mountain, she met difficulties, some of which were life-threatening, but she came across many solutions and got close to her destination.

Before figuring out whether Minli reached the Never-Ending Mountain and found the Old Man of the Moon or not, we notice that by solving difficulties and dangers on the journey, Minli has gained an understanding of herself and gradually has obtained the essence of happiness without the answer from the Old Man of the Moon. Grace Lin demonstrates Minli’s understanding of happiness was shifting from merely the pursuit of wealth to the self-realization and love-seeking journey.

Erikson argues that exploring different aspects of oneself in different areas of life, including the role at school, within the family, and in friendships, could help children strengthen their personal identity (Erikson, 1968). We have talked about Minli’s identity crisis. According to Erikson’s theory, we could basically assume that Minli’s identity crisis -- the struggling of being obedient or not and being cowardice or brave -- would to some extent be relieved on her way to the Never-Ending Mountain, which is an adventure that serves as an exploration of herself, as suggested by Erikson. To explain, the adventure brought her different life experiences which is thrilling and exciting and has little in common with the monotonous life in the village. She could, therefore, build a stronger personal identity and form a better understanding towards life through the exploration. There are many places in the book where Grace Lin demonstrates the function of the exploration, and one typical evidence is Minli’s expression of homesickness:

At the beginning of the journey, “At night, when the dragon slept, Minli missed Ma and Ba.”(Lin, 2009: 88), we can tell that Minli missed her parents from the beginning of her journey, however, she was still determined to obtain wealth which she regarded as something critical for her family. Then she met the buffalo boy, “He spoke ...Suddenly, Minli thought about her own home -- the wood floor always swept by Ma, the extra blanket Ba put over her when the wind blew cold -- and she felt strange tightness in her throat” (Lin, 2009: 105), and “She kept thinking about Ma and Ba and the orphan buffalo boy. With pangs of guilt, she thought about how Ma and Ba pushed her to go home early from the field, how her rice bowl was always the first filled, how every night when she went to sleep in her warm bed she

knew they were there and how worried they must be that now she was not" (Lin, 2009: 159). From here we can see that Minli has gradually realized what is most important for her and her family's happiness, and her homesickness accumulated. At almost the very end of her journey and before she headed to the Never-Ending Mountain, "Minli smiled gratefully...A wave of longing washed through her and a dryness caught her throat that the tea could not moisten" (Lin, 2009: 201-2). Comparing three times of homesickness, we can tell that Minli's homesickness has been increasingly strong at the end of her journey from the description of the dryness in her throat. Clearly, Grace Lin intentionally compares the degree of homesickness by saying "a strange tightness in her throat" and "a wave of longing washed through her and a dryness caught her throat that the tea could not moisten". So that we can see her value of happiness has gradually been figured out by herself. Also, her value of money has changed. When she offered the buffalo boy the last coin she had to show her gratitude for his help, Grace Lin writes "Yet, he turned away her copper coin and laughed in the sun. Minli ... felt ashamed" (Lin, 2009: 159). Seeing how happy the buffalo boy was when he saw his secretive friend, even though he lived in extreme poverty, rendered Minli to feel ashamed and she started to reflect her view towards money.

We can regard her journey as self-exploration and grow-up, which started from seeking fortune and erase poverty to gain happiness. We have talked about how long she has conceived this plan, and she has taken actions to step out of familiarity, leaven her parents, and challenged her agonies. It is the chance she offered herself to grow up because, without her brave actions, she might be a real "obedient girl" and think about her parents but would struggle in her dream. Therefore, her actions initially made her the hero of herself, clearing her mind of how lucky she was to be surrounded by parental love and how cherished she should be to stay with parents in their house.

### 3. Conclusion

Having proved that Minli has grown up on her journey, her challenge of adverse situations taught her the essence of happiness and she realized that at the very end of her journey when she walked on the borrowed line to the Never-Ending Mountain, which is the symbol of her transcendence. It was not just to challenge her agonies, but it was to bring happiness to her friends and the whole village. Her shift in midset is shown in the shift of her pursuit: one is from seeking wealth to seeking happiness; the other is from her personal happiness and fortune realization to community's happiness and fortune realization.

Although this paper has discussed an important aspect of children's literature which needs further exposure and interest by the wider audience of children's literature due to its display of

real-life situations, it does not directly engage in the realistic and didactic meaning of the book in question. Hence, further research must be undertaken to study this book from the perspective of cognitive criticism theories, which are the most recent and hottest research topics that involve wide debates.

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# Efficacy of Double-incision Ultrasonic Emulsification in Combination with Trabeculectomy in the Treatment of Cataract Complicated with Glaucoma and Impacts on Changes of Visual Quality: Ocular Surface and Tear Film in Patients

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**Abstract:** *Objective:* Efficacy of double-incision ultrasonic emulsification in combination with trabeculectomy in the treatment of cataract complicated with glaucoma and impacts on changes of visual quality, ocular surface and tear film in patients. *Methods:* A total of 108 patients with cataract complicated with glaucoma (all monocular onset) were treated in our hospital from September 2016 to August 2018 and selected as study subjects, who were randomly divided into observation group and control group according to the random number table. Of 54 patients in the observation group were treated with double-incision ultrasonic emulsification in combination with trabeculectomy, while 54 patients in the control group were treated with single-incision ultrasonic emulsification in combination with trabeculectomy. The intraocular pressure (IOP), visual function (uncorrected visual acuity and best corrected visual acuity), filtering bleb formation three months before and after treatment; the xeroma score, break-up time (BUT) of tear film, cornea fluorescein staining (CFS) score, schirmer I test (SIt) value one week before and after treatment, and three months after treatment; and the visual quality score and incidence of complications were compared between the two groups. *Results:* The intraocular pressure in the observation group was lower than that in the control group after treatment, and the uncorrected visual acuity and best corrected visual acuity were better than those in the control group. The difference was statistically significant ( $P < 0.05$ ). The rate of functional filtering bleb formation in the observation group was higher than that in the control group after treatment. The difference was statistically significant ( $P < 0.05$ ). The score of dry eye symptoms in the observation group was lower than that in the control group one week and three months after treatment. The difference was statistically significant ( $P < 0.05$ ). The CFL score in the observation group was lower than that in the control group one week and three months after treatment. Both BUT and SIt values were higher than those in the control group. The difference was statistically significant ( $P < 0.05$ ). The satisfaction rate of visual quality evaluation in the observation group was also significantly higher than that in the control group after treatment. The difference was statistically significant ( $P < 0.05$ ). The overall incidence of complications in the observation group was lower than that in the control group. However, the difference was not statistically significant ( $P > 0.05$ ). *Conclusion:* The efficacy of double-incision ultrasonic emulsification in combination with trabeculectomy is significant in the treatment of cataract complicated with glaucoma. It can effectively lower the intraocular pressure, improve the visual function and reduce the changes of eye surface and tear film.

**Key words:** Double-incision, Single-incision, Ultrasonic emulsification in combination with trabeculectomy, Cataract complicated with glaucoma, Eye surface; Tear film

## Introduction

Cataract complicated with glaucoma is a common clinical ophthalmic disease. The middle-aged and the elderly people are the most common groups in this disease. With the aging of our country, there are more and more cases of

cataract complicated with glaucoma [1]. In cataract patients, protein degeneration occurs due to abnormal lens metabolism. Lens opacification leads to visual impairment while lens expansion pushes iris forward, resulting in closure of anterior chamber angle, increase of intraocular pressure, and finally developing glaucoma. The two diseases interact with each

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other, and the occurrence at the same time will aggravate the disease and cause irreversible blindness and greatly reduce the quality of life of the patients [2]. In recent years, cataract complicated with glaucoma is mainly treated with ultrasonic emulsification in combination with trabeculectomy, which can effectively reduce the intraocular pressure and restore the visual function [3]. However, there is no agreement on the clinical efficacy of different incisions. In view of this, this study has selected cataract patients with glaucoma in recent two years for a prospective study in order to compare the efficacy of double-incision ultrasonic emulsification and single-incision ultrasonic emulsification in combination with trabeculectomy. It is reported as follows.

## 1. Data and method

### 1.1 General data

A total of 108 patients with cataract complicated with glaucoma (all monocular onset) were treated in our hospital from September 2016 to August 2018 and selected as study subjects, who were randomly divided into observation group and control group according to the random number table. There were 54 patients in the observation group, including 23 males and 31 females, with a range between 40 and 70 years old and mean age of  $(57.37 \pm 5.72)$  years old, of which 29 patients happened in the left eye and 25 patients in the right eye, with a course of disease from 4 months to 8 years and an average of  $(5.06 \pm 2.13)$  years. There were 54 patients in the control group, including 22 males and 32 females, with a range between 43 and 75 years old and mean age of  $(58.13 \pm 5.36)$  years old, of which 30 patients happened in the left eye and 24 patients in the right eye, with a course of disease from 6 months to 9 years and an average of  $(5.28 \pm 2.51)$  years. The general data of the two groups were similar ( $P > 0.05$ ) and comparable. This study is approved by the Ethics Committee of our hospital.

Inclusion criteria: (1) Patients who meet the diagnostic criteria for cataract and glaucoma. [4] (2) Patients who have no history of ophthalmic surgery (3) Patients who have no active inflammation in the eyes in recent three months. (4) Patients who are fully informed of this study and sign the informed consent form voluntarily.

Exclusion criteria: (1) Patients who are accompanied by autoimmune disease and connective tissue disease. (2) Patients who are accompanied with other systemic diseases. (3) Patients who have the history of eye trauma. (4) Pregnant and lactating women (5) Patients who have the history of mental illness.

### 1.2 Treatment method

Control group: Single-incision ultrasonic emulsification in combination with trabeculectomy was used. The intraocular pressure of the patients was controlled within 25

mmHg. The topical anesthesia was performed after mydriasis. A conjunctival flap was made on the base of fornix and a scleral flap was made 2 mm behind the corneal limbus. A trabecular incision was pre-set. It was separated forward to the transparent cornea at 1 mm above the scleral flap. The viscoelastics was injected into the anterior chamber and the continuous annular capsulorhexis was carried out. The diameter of the capsule was controlled at about 5 mm. After full hydrodissection, the ultrasonic emulsification was performed and the lens nucleus was sucked out. Then the intraocular lens was implanted. The trabecular tissue (3 mm×2 mm) was resected at the preset trabecular incision. The surrounding iris was resected. The distal scleral flap was sutured. IOP test was carried out after the anterior chamber was recovered. The closure of the incision was observed and it was closed at the conjunctiva and sutured with two stitches. Dexamethasone 25 mg and tobramycin 20,000 IU were injected subconjunctivally after finishing operation. TobraDex eye ointment was used in the eyelid, with monocular bandaging.

Observation group: Double-incision ultrasonic emulsification in combination with trabeculectomy was used. The patient's intraocular pressure was controlled within 25 mmHg. Topical anesthesia and local infiltration anesthesia were performed after mydriasis. A conjunctival flap was made upon the fornix as a base and a scleral flap (1/2 of scleral thickness in depth, and 3 mm×3 mm in size) was made upon corneoscleral margin as the base. Then a transparent corneal incision (width was 3.2 mm) was made at 10 o'clock and a lateral incision was made at 2 o'clock. Continuous curvilinear capsulorhexis was performed. The ultrasonic emulsification was carried out after full hydrodissection. The lens nucleus was sucked out and the intraocular lens was implanted. Carbamylcholine was injected into the anterior chamber for myosis. The subscleral trabecular tissue (3 mm×2 mm) and peripheral iris were resected. The distal scleral flap and conjunctival flap were sutured with two stitches, respectively. Dexamethasone 25 mg and tobramycin 2,02IU were injected subconjunctivally after finishing operation. TobraDex eye ointment was used in the eyelid, with monocular bandaging.

### 1.3 Index observation

The patient's intraocular pressure (IOP), visual function (uncorrected visual acuity and best corrected visual acuity) and filtering bleb formation (micro-filtering bleb, diffused flat filtering bleb, absent filtering bleb, wrapped filtering bleb) were observed by slit lamp microscope three months before and after treatment. Functional filtering bleb = micro-filtering bleb + diffused flat filtering bleb.

The following tests were performed one week before after treatment and three months after treatment. (1) Dry eye



questionnaire survey was used in the study, including symptoms of foreign body feelings and sensation of dryness. No symptom was scored as 0 point, and the occasional symptom as 1 point, intermittent mild symptom as 2 points and obvious persistent symptom as 3 points. (2) Tear break-up time (BUT): After fluorescein staining test, the time from tear film to dry spot  $<10$  s was unstable tear film and  $\geq 10$  s was normal. (3) Corneal fluorescein staining (CFS) score: After the completion of BUT test, the fluorescein staining of cornea (4 quadrants) was continuously observed by slit lamp. No staining was scored as 0 point, and staining was scored between 0-12 points according to the coloring degree. The higher the score is, the heavier the staining will be. (4) Schlrmer I test (SI): One end of the filtering paper strip (5 mm $\times$ 35 mm) was bent at 5 mm and inserted into the 1/3 conjunctival sac in the medial lower eyelid. The patient was naturally and gently closed the eyes. The filter paper strip was taken out after five minutes, and the wet length was measured. The normal value was  $>10$  mm/5 min.

The self-evaluation of the visual quality was carried out by patients themselves three months after treatment, including the clarity, stability, comfort and vision, etc. Satisfaction rate = proportion of the very good cases + proportion of good cases The complications of iris injury, corneal edema, vitreous prolapse, anterior uveitis and hyphema were recorded in the two groups.

statistical software. The measurement data were in

accordance with the normal distribution and the variance was equal, expressed by the mean $\pm$ standard deviation ( $\pm s$ ). The variance was repeatedly measured for the measurement data at different time points. Independent sample t test was performed for comparison among groups and paired samples t test was performed for comparison within groups. The enumeration data were expressed by percentage (%), and chi-square test or corrected chi-square test was performed for comparison among groups. The significant level analysis  $\alpha=0.05$  was two-sided test and  $P < 0.05$  meant the difference was statistically significant.

## 2. Results

### 2.1 Comparisons of intraocular pressure and visual acuity between the two groups before and after treatment

The difference in intraocular pressure, uncorrected visual acuity and best corrected visual acuity was not statistically significant ( $P > 0.05$ ) between the two groups before treatment. The intraocular pressure in the observation group was lower than that in the control group, and the uncorrected visual acuity and best corrected visual acuity were better than those in the control group after treatment. The difference was statistically significant ( $P < 0.05$ ), as shown in Table 1.

#### 1.4 Data analysis

Statistical analysis shall be conducted using SPSS 20.0

**Table 1. Comparisons of intraocular pressure and visual acuity between the two groups before and after treatment ( $\pm s$ )**

| Group             | Number of cases | Time             | Intraocular pressure (mmHg) | Uncorrected visual acuity | Best corrected visual acuity |
|-------------------|-----------------|------------------|-----------------------------|---------------------------|------------------------------|
| Observation group | 54              | Before treatment | 31.38 $\pm$ 6.48            | 0.14 $\pm$ 0.07           | 0.25 $\pm$ 0.11              |
|                   |                 | After treatment  | 13.27 $\pm$ 1.73*#          | 0.68 $\pm$ 0.22*#         | 0.75 $\pm$ 0.26*#            |
| Control group     | 54              | Before treatment | 30.98 $\pm$ 6.25            | 0.13 $\pm$ 0.06           | 0.24 $\pm$ 0.09              |
|                   |                 | After treatment  | 15.49 $\pm$ 3.27*           | 0.53 $\pm$ 0.18*          | 0.62 $\pm$ 0.23*             |

Notes: Compared with pre-treatment, \* $P < 0.05$ ; compared with post-treatment, #  $P < 0.05$ .

### 2.2 Comparison of filtering bleb formation between the two groups

The rate of functional filtering bleb formation in the

observation group was higher than that in the control group. The difference was statistically significant ( $P < 0.05$ ). See table 2.

**Table 2. Comparison of filtering bleb formation between the two groups [n (%)]**

| Group             | Number of cases | microminiature | Diffused flat type | Absent type | Wrapped type | Function-oriented |
|-------------------|-----------------|----------------|--------------------|-------------|--------------|-------------------|
| Observation group | 54              | 26(48.15)      | 23(42.59)          | 4(7.41)     | 1(1.85)      | 49(90.74)         |
| Control group     | 54              | 14(25.93)      | 26(48.15)          | 9(16.67)    | 5(9.26)      | 40(74.07)         |

|          |       |
|----------|-------|
| $\chi^2$ | 5.173 |
| P        | 0.023 |

**2.3 Comparison of eye surface changes between the two groups**

The difference in dry eye symptom scores was not statistically significant ( $P>0.05$ ) between the two groups

before treatment. The dry eye symptom scores in the observation group were lower than those in the control group one week and three months after treatment. The difference was statistically significant ( $P<0.05$ ), as shown in Table 3.

**Table 3. Comparison of dry eye symptom scores between the two groups ( $\pm s$ , score)**

| Group             | Number of cases | Dry eye symptom scores |                         |                              |
|-------------------|-----------------|------------------------|-------------------------|------------------------------|
|                   |                 | Before treatment       | 1 weeks after treatment | Three months after treatment |
| Observation group | 54              | 0.37 $\pm$ 0.18        | 3.25 $\pm$ 0.22*#       | 0.42 $\pm$ 0.20#             |
| Control group     | 54              | 0.39 $\pm$ 0.17        | 3.52 $\pm$ 0.26*        | 0.63 $\pm$ 0.23*             |

Notes: Compared with pre-treatment, \* $P<0.05$ ; compared with Control group, #  $P<0.05$ . Famong group=4.412,  $P=0.023$ , Ftime=27.635,  $P=0.000$ , Famong group $\times$ time=15.613,  $P=0.000$

**2.4 Comparison of tear film changes between the two groups**

The difference in BUT, SIt value and CFL score was not statistically significant ( $P>0.05$ ) between the two groups before treatment. The CFL score in the observation group

was lower than that in the control group one week and three months after treatment, while both BUT and SIt values were higher than those in the control group. The difference was statistically significant ( $P>0.05$ ), as shown in Table 4.

**Table 4. Comparison of tear film changes between the two groups ("4"  $\pm s$ )**

| Group             | Number of cases | Time                         | BUT(s)            | SIt value (mm/5 min) | CFL scores (point) |
|-------------------|-----------------|------------------------------|-------------------|----------------------|--------------------|
| Observation group | 54              | Before treatment             | 5.61 $\pm$ 2.13   | 16.12 $\pm$ 2.41     | 2.03 $\pm$ 0.61    |
|                   |                 | 1 weeks after treatment      | 3.58 $\pm$ 1.43*# | 12.05 $\pm$ 3.57*#   | 6.13 $\pm$ 2.56*#  |
|                   |                 | Three months after treatment | 5.17 $\pm$ 1.84#  | 13.45 $\pm$ 3.84*#   | 2.44 $\pm$ 0.34*#  |
| Control group     | 54              | Before treatment             | 5.65 $\pm$ 2.30   | 16.08 $\pm$ 2.62     | 1.96 $\pm$ 0.72    |
|                   |                 | 1 weeks after treatment      | 2.65 $\pm$ 1.21*  | 10.37 $\pm$ 3.26*    | 7.64 $\pm$ 3.15*   |
|                   |                 | Three months after treatment | 4.25 $\pm$ 1.68*  | 11.87 $\pm$ 3.51*    | 3.15 $\pm$ 0.83*   |

Notes: Compared with pre-treatment, \* $P<0.05$ ; compared with Control group, #  $P<0.05$ . BUT: Famong group=6.161,  $P=0.013$ , Ftime=12.456,  $P=0.000$ , Famong group $\times$ time=10.416,  $P=0.000$  SIt value: Famong group=8.125,  $P=0.005$ , Ftime=16.372,  $P=0.000$ , Famong group $\times$ time=14.213,  $P=0.000$  CFL scores: Famong group=10.263,  $P=0.000$ , Ftime=23.152,  $P=0.000$ , Famong group $\times$ time=14.672,  $P=0.000$

**2.5 Comparison of visual quality evaluation between the two groups**

The satisfaction rate of visual quality evaluation in the

observation group was higher than that in the control group. The difference was statistically significant ( $P<0.05$ ), as shown in Table 5.

**Table 5. Comparison of visual quality evaluation between the two groups [n (%)]**

| Group             | Number of cases | Very good | Okay | General | Poor | Satisfaction |
|-------------------|-----------------|-----------|------|---------|------|--------------|
| Observation group | 54              | 28        | 18   | 6       | 2    | 85.19        |
| Control group     | 54              | 19        | 17   | 12      | 6    | 66.67        |

|          |       |
|----------|-------|
| $\chi^2$ | 5.066 |
| P        | 0.024 |

### 2.6 Comparisons of conditions between the two groups

The overall incidence of complications in the observation group was lower than that in the control group.

However, the difference was not statistically significant ( $P > 0.05$ ). See table 6.

**Table 6. Comparison of Complications between Two Groups [n (%)]**

| Group             | Number of cases | Iris damage | Corneal edema | Vitreous prolapse | Anterior uveitis | Hyphema  | Total     |
|-------------------|-----------------|-------------|---------------|-------------------|------------------|----------|-----------|
| Observation group | 54              | 0 (0.00)    | 1 (1.85)      | 0 (0.00)          | 1 (1.85)         | 0 (0.00) | 2 (3.70)  |
| Control group     | 54              | 1 (1.85)    | 2 (3.70)      | 1 (1.85)          | 2 (3.70)         | 1 (1.85) | 7 (12.96) |
| $\chi^2$          |                 |             |               |                   |                  |          | 1.939     |
| P                 |                 |             |               |                   |                  |          | 0.164     |

### 3. Discussions

Cataract and glaucoma are two common causes of blindness, both of which are mutually reciprocal causation and mutual progression in condition. Therefore, it is the focus of the present study to find an effective surgical treatment method to both control the intraocular pressure and remove the cataracts for the patients who have suffered from the cataract complicated with glaucoma. At present, there are three surgical methods for the treatment of cataract complicated with glaucoma: (1) Simple ultrasonic emulsification for cataract (2) Ultrasound emulsification after trabeculectomy or trabeculectomy after ultrasound emulsification (3) Ultrasound emulsification in combination with trabeculectomy [5] Transient elevation of intraocular pressure is easy to turn up in the traditional simple ultrasound emulsification after operation. Moreover, the intraocular pressure is not controlled ideally in some patients and the trabeculectomy still needs to be performed. If the trabeculectomy is performed first to reduce the intraocular pressure, it is difficult to carry out ultrasound emulsification because of filtering bleb scarring, and it may increase the mental and economic burdens of the patients [6-8]. Ultrasound emulsification in combination with trabeculectomy has the advantages of less injury and faster recovery. The visual function can be restored through one operation and the intraocular pressure can be effectively controlled. Hence it is accepted by the majority of clinical ophthalmologists. The mechanism of combined operation in the reduction of intraocular pressure is as follows: The aqueous humor flows out of the passage after trabeculectomy and the peripheral chamber angle was loosened after ultrasound emulsification, thus the intraocular pressure is reduced. At the same time, this operation has used the intraocular lens (less than 1 mm

in thickness) to replace the human eye lens (5 mm in thickness), so that the depth of the anterior chamber becomes deeper and the pupil blockage is solved. In addition, the closure of the incision is good, which is beneficial to the realization of high perfusion pressure in the ultrasound emulsification and aspiration, and reopening the part of the adhered chamber angle. Whereas the use of viscoelastics during the operation could also obtantly separate the adhesion of the chamber angle, thus reducing the intraocular pressure [9-11].

Ultrasound emulsification in combination with trabeculectomy can be treated with single-incision or double-incision treatment. However, it has not been concluded which incision is more effective. Cha Mingxuan [12] et al. compared the clinical effects of combined single-incision and double-incision surgery in the treatment of cataract complicated with glaucoma. The results showed that the combined operation of the two incisions could effectively reduce the intraocular pressure, improve the visual function and form the functional filtering bleb. However, the difference in postoperative intraocular pressure, visual function improvement and functional filtering bleb formation was not significant between the two methods. Wang Shuying et al. [13] used the triple surgical treatment to treat the patients with angle-closure glaucoma complicated with cataract by single-incision and double-incision ultrasound emulsification and intraocular lens implantation in combination with trabeculectomy, respectively. The results showed that the intraocular pressure, uncorrected visual acuity and best corrected visual acuity in the double-incision group were better than those in the single-incision group, and the depth of the central anterior chamber and the opening degree of the chamber angle were higher than those in the single-incision group. It is considered that the double-incision triple surgery is more effective in the

treatment of cataract complicated with glaucoma.

This study has evaluated the efficacy of single-incision and double-incision treatment on the intraocular pressure, visual function, filtering bleb formation, eye surface and tear film changes, visual quality and complications of patients. The results showed that the reduction of intraocular pressure and the recovery level of uncorrected visual acuity and best corrected visual acuity in the observation group were higher than those in the control group after the operation, and the formation rate of functional filtering bleb in the observation group was higher than that in the control group after operation. It is suggested that the combined double-incision operation can effectively improve the visual acuity and control the intraocular pressure. Ophthalmic surgery is often accompanied by eye surface and tear film changes. The change of eye surface mainly refers to xeroma (dry eye). Xeroma is a general name of disease with ocular surface changes caused by abnormal tear eye and unstable tear film, which is related to the microscopic surface injury of eyes [14]. The results of this study showed that the xeroma score and FL score in the observation group were significantly lower than those in the control group, and the BUT and SI values were significantly higher than those in the control group. It is suggested that the combined double-incision operation has less effect on the eye surface and stronger stability of tear film. The satisfaction rate of visual quality evaluation in the observation group was also significantly higher than that in the control group. It indicates that the subjective feeling of the patients is also better than that of the combined double-incision operation. The cause analysis reveals that it is necessary to operate repeatedly in the same incision tunnel due to combined single-incision procedures, which is easy to aggravate the inflammatory reaction and stimulate the filtering area and sclera tissue greatly. Therefore, the antihypertensive effect is poor. The combined double-incision operation can reduce the stimulation on the filtering area and scleral tissue during ultrasonic emulsification because the incision of ultrasonic emulsification is different from that of trabeculectomy. Meanwhile, the access times of the device is reduced. Therefore, the post-operative filtering bleb scarring is reduced to obtain the ideal filtering bleb [15]. Ultrasonic emulsification will inevitably lead to corneal damage of the affected eye, while the corneal damage will cause eye surface and tear film changes. It generally takes about three months to repair. Therefore, the corneal endothelial cell damage should be minimized during the operation. Double-incision can effectively protect the corneal endothelial cells [16] because of its small intraoperative instrument stimulation, reduction of leakage from incision during the operation and better stability of anterior chamber. In terms of complications,

the incidence of complications in the observation group is lower than that in the control group, but the difference is not statistically significant. It indicates that the impacts of single-incision and double-incision procedures on complications are similar, but the influence of a small number of cases cannot be ruled out.

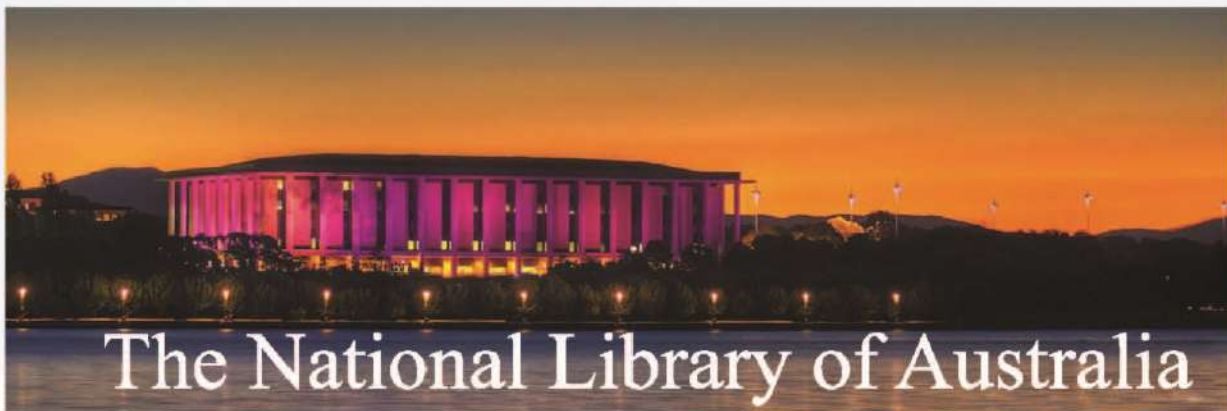
In conclusion, both single-incision and double-incision ultrasonic emulsification in combination with trabeculectomy can effectively treat the cataract complicated with glaucoma. However, the combined double-incision operation has the more advantages in the reduction of intraocular pressure, the improvement of visual function, the formation of functional filtering bleb, the decline of the changes of ocular surface and tear film. Therefore, it is worthy of clinical promotion.

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