

Students' Conceptions of Interactive Spherical Video-based Virtual Reality Supported Chinese Writing Learning

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Abstract: This qualitative study reports the results of a phenomenographic analysis of students' conceptions of Interactive Spherical Video-based Virtual Reality (ISVVR) supported Chinese writing. In the study, six Grade-9 students in Hong Kong participated in an ISVVR supported Chinese writing learning program. Data were collected through semi-structured interviews. Three qualitatively different themes related to ISVVR supported Chinese writing learning were revealed: 1) purpose of learning Chinese writing, 2) use of ISVVR to improve Chinese writing, and 3) motivation of using ISVVR to learn Chinese writing. Different conception categories of the themes form a hierarchy and show a trajectory that writing paradigm shifts from learner-oriented to author-oriented. This study offers an empirical reference for teachers and researchers to have a closer look at students' conceptions of Chinese writing and ISVVR supported Chinese writing.

Keywords: Interactive Spherical Video-based Virtual Reality (ISVVR); Chinese education; writing education; students' conceptions

1. Introduction

1.1 Background

Innovative technologies are changing the way people live and work, as well as the way of teaching and learning. Technology-enhanced learning (TEL) considers "the use of information communication and technology (ICT) in its widest sense to support and improve the learning experience" (Gordon, 2014). Spherical videos, also known as 360-degree videos, can provide an all-round view of places at the same time. Interactive spherical video-based virtual reality (ISVVR) may be a new educational tool to support the learning and teaching activities in which "students' observation" is an important pedagogic component (Geng, Chai, Jong & Luk, 2019).

Writing education is one possible area that may benefit from the ISVVR technology. According to the "Hong Kong diploma of secondary education (HKDSE) examiners' report", some students' writing performance was less satisfactory. Their compositions lacked detailed and varied descriptions, and they failed to convey sincere and delicate emotions (Hong Kong Examination and Assessment Authority, 2018). The report alluded that students may lack observation in daily life and they may lack understanding of people, communities, and society. Therefore, improvements of Chinese writing education by facilitating students' observation and understanding of people, communities, and society is needed.

Compared with traditional field trips, ISVVR is not constrained by time and space. It provides students with extended opportunities and perspectives for observing places and the people therein. Moreover, as a form of situated learning (Lave & Wenger, 1991), virtual reality can help students experience the places more deeply. By adjusting their viewing angles, students can explore and observe elements in the scene more closely, which can better stimulate their thoughts. Moreover, students can observe their communities more comprehensively with virtual reality, which can foster them to better understand the context of communities and make reflections on their life.

The purpose of this study was to explore students' conceptions of ISVVR supported Chinese writing learning. Six Grade-9 students who used the ISVVR to learn Chinese writing were interviewed.

1.2 ISVVR-supported Chinese Writing Learning Program

This study is a part of an ISVVR-supported Chinese writing project. In the project, junior high school students use ISVVR to learn how to write landscape literature in Chinese. Landscape in literature refers to the texts about a specific place that has been conferred special meaning by the writers. This is an established form of Chinese literature and it usually includes nostalgia with landscapes as a means to cherish memories.

ISVVR can provide students with the platform for viewing the landscapes so as to foster and sharpen their understanding of texts. Some landscapes highlighted in texts still exist but teachers might not conduct field trips or site visits for students due to limiting factors (i.e. lesson time and spatial distribution). Virtual reality can instead project the scenarios of the texts. Some landscapes mentioned in texts have disappeared with time. Virtual reality can reflect the historical progress contrasting today's development to provide a new reading experience for students. Figure 1 shows a landscape of Hong Kong in ISVVR.

In this project, there were five stages in the teaching process: learning basic knowledge, learning famous works of this landscape, observing the landscape with ISVVR, writing compositions on related topics, and evaluation and feedback. The teaching cycle lasted for three weeks.



Figure 1. Views of ISVVR

2. Method

2.1 Participants

A total of six students from a junior high school in the ISVVR-supported Chinese writing project were interviewed. There are three girls and three boys. By maximizing the variation among the participants, it is expected that the range of meanings derived from this study could be representative of the range of meanings within the target population (Åkerlind, 2005). All the participants were assigned the letter “S” and a number (e.g., “S1”), allowing their identity to remain anonymous when reporting the results.

2.2 Data Collection

Data were collected through semi-structured interviews. In other words, a list of predetermined open questions that focused on the students' ideas and experiences about ISVVR-supported Chinese writing learning was used to prompt students' reflection on Chinese writing learning. Some examples of the guiding questions used to probe the students' ideas about Chinese writing with ISVVR are as follows:

1. Do you enjoy Chinese writing? If yes, in which aspects do you enjoy Chinese writing?
2. Do you see Chinese writing as an important skill to develop?
3. How do you feel about using ISVVR to learn Chinese writing?
4. After this round of study, have you become more interested in learning Chinese writing?

Additionally, follow-up questions such as “Could you give me an example?” and “What do you mean by that?” were used to invite students to elaborate on their ideas. Students were interviewed in

Mandarin Chinese or Cantonese by a trained researcher. The interview time ranged from approximately 40 to 60 minutes. All the interviews were audio-recorded and transcribed word for word.

2.3 Data Analysis

The purpose of this study was to explore students' conceptions of ISVVR-supported Chinese writing learning and to find variations in their experience. To this end, the phenomenographic approach (Marton, 1981) was employed to analyze the student interview transcripts. The transcripts were analyzed iteratively. The data analysis process started with reading through the transcripts as a whole for several times to gain familiarity with the students' ideas. Next, the key meanings expressed in the transcripts were highlighted and marked with some keywords that best describe the students' views regarding Chinese writing and using the ISVVR to learn Chinese writing. The key meanings were then compared and contrasted to identify similarities and differences between them. Then, structural relationships that related or distinguished the key meanings were examined.

3. Results

3.1 Purpose of Learning Chinese Writing

Six different categories of students' conceptions of the purpose of learning Chinese writing were identified through the phenomenographic analysis, as follows and a sample of students' answer is given for each category:

1) Seek new information. In this category, Chinese writing was described as a means of knowing new things.

S6: I felt like I was getting a lot of information out of writing that I hadn't heard of before.

2) Express their feelings. In this category, Chinese writing was described as a way to express their feelings towards people, things and events.

S3: I write because I want to write about my feelings. For example, when I see a very new coffee shop in Sham Shui Po (an old block in Hong Kong), I am surprised because it doesn't fit in with the surrounding environment.

3) Write their own opinions. In this category, participating students emphasized writing down their own opinions and ideas which are different from others'.

S2: It can be written from our perspectives. Sometimes we may have different opinions on some things, such as our feelings, angles, and moods.

4) Influence what other people think. In this category, participating students considered Chinese writing as an opportunity to influence others.

S2: By writing, we can let people know what we think, and what we think can influence what they think.

5) Enjoy a sense of accomplishment. In this category, participating students thought completing a Chinese composition would bring them a sense of achievement.

S5: I think when I put my heart into writing and finish the process, I will feel satisfied.

Have a joy of creation. In this category, participating students used their imagination when they were writing Chinese composition, and viewed this as a creative process.

S4: Actually, I prefer to write. I think we can enjoy the process of writing. It's like creating something.

3.2 Use of ISVVR in Improving Chinese Writing

Six different categories of students' conceptions of the using ISVVR to learn Chinese writing were identified through the phenomenographic analysis. These six categories form a hierarchy, from the surface to sophisticated. The participating students thought through ISVVR, they can :

1) Have more time to observe the landscape, community, and people in the ISVVR.

S2: Usually, we don't look at things very carefully. It's just like giving a hurried and cursory glance. If we use VR in class, we will look at things more carefully.

2) Accumulate more writing materials, and then to rich the composition's content.

S4: Just like him, I have written down what I saw in the VR. From the VR film, I can see the night in Sham Shui Po. It's really busy.

3) *Use more descriptive techniques and multi-angle description.*

S1: I think with VR, I can have more things to write, and then I can use more descriptive techniques, and I can write from different angles.

4) *Write more details, so their writing is more concrete and vivid.*

S3: When I used to describe a place which has a lot of people, I would write "there are a lot of people". I would not describe the faces nor action manner of those people in detail. VR let me see more details, so now I write as "people jostle each other in a crowd and they are shoulder to shoulder".

5) *Obtain new perspectives. They thought ISVVR provide views and perspectives which are different from what they used to see.*

S5: Usually, I don't pay special attention to the places, but when I use VR, I see that the place is different from what I thought.

6) *Get inspiration. In this category, students had a deeper understanding of the landscape through teachers' explanation of histories and views, so that they can get inspiration and find a theme to write.*

S6: ...and there's a chain restaurant, and this is the segment that impressed me most because it reflects the changes of times, and some things are replaced, and this is the feeling it brings to me.

3.3 The Motivation of Using ISVVR to Learn Chinese Writing

Six different categories of students' motivation to using ISVVR to learn Chinese writing were identified through the phenomenographic analysis. These six categories form a hierarchy, from surface to sophisticated:

1) *Students won't become interested in Chinese writing only because of the use of ISVVR.*

S1: In fact, I would not become interested in Chinese writing because of the study of this unit or the use of VR.

2) *Parents' pressure and teachers' encouragement. In this category, students' motivation for Chinese writing is external.*

S2: There is also pressure from my parents. If I fail in writing, my parents will confiscate a lot of things from me, so I will try my best to improve my performance.

3) *Have a feeling of freshness. In this category, participant students enjoyed using ISVVR to learn Chinese writing because they like to try something new.*

S5: VR is such a high-tech thing that I don't get much exposure to, and then the process is like playing, and I can see a lot of new things.

4) *The class is more active and engaging. Participating students felt the ISVVR class was more interesting compared with a traditional writing class.*

S3: It's just that I don't have to listen to the teacher all the time and the class is more interesting.

5) *Observe in a comfort zone. In this category, participating students considered it's a comfortable way to observe the landscape compared with the traditional field observation.*

S4: I can observe in a comfortable environment without embarrassment or inconvenience.

6) *More confidence leads to more motivation. In this category, participant students showed their interest in learning Chinese writing by ISVVR because they got higher scores in the writing examination, and they felt more confident about Chinese writing.*

S3: This time, my score is higher, and my composition can be better, so I want to continue using VR.

4. Conclusion

We have reported the students' conceptions of ISVVR supported Chinese writing learning unfolded from our study. Three different themes were revealed: 1) purpose of learning Chinese writing, 2) use of ISVVR in improving Chinese writing, and 3) motivation of using ISVVR to learn Chinese writing. We also find that different conception categories of these themes form hierarchies and show a trajectory moving from learner-oriented to author-oriented conceptions. Students' conception reflects how they learn Chinese writing and how they see themselves as a writer. Hounsell (1987) suggested that students and teachers must share an understanding of the assumptions underlying the advice given before it can be effective. This study offers a reference for teachers and researchers to have a closer look at students'

conceptions of Chinese writing and ISVVR supported Chinese writing. In the future, we will further study how teachers reflect on the pedagogy design based on students' conceptions of ISVVR supported Chinese writing.

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References

- Åkerlind, G. S. (2005). Academic growth and development - how do university academics experience it? *Higher Education*, 50, 1-32. <http://doi.org/10.1080/03075070601099416>.
- Geng, J., Chai, C. S., Jong, M. S. Y., & Luk, E. T. H. (2019). Understanding the pedagogical potential of Interactive Spherical Video-based Virtual Reality from the teachers' perspective through the ACE framework. *Interactive Learning Environments*, 1-16.
- Gordon, N. (2014). *Flexible Pedagogies: technology-enhanced learning*. The Higher Education Academy, UK.
- Hong Kong Examination and Assessment Authority (2018). *Hong Kong diploma of secondary education (HKDSE) examiners' report*. Received August 10, 2019, from: http://www.hkeaa.edu.hk/tc/HKDSE/assessment/subject_information/category_a_subjects/chi_lang/or/bs2018.html
- Hounsell, D. (1987). Essay writing and the quality of feedback. *Student learning: Research in education and cognitive psychology*, 109-119.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge university press.
- Marton, F. (1981). Phenomenography - describing conceptions of the world around us. *Instructional Science*, 10, 177-200. <http://doi.org/10.1007/BF00132516>. Received August 10, 2019, from: https://www.heacademy.ac.uk/system/files/resources/tel_report_0.pdf