**Contents**

1． Introduction介绍

1.1 Background and research environment 背景和研究环境

1.2 Objectives and scope 目标和范围

1.3 Investigating requirements for education applications 教育应用需求调查

1.4 Dissertation structure 论文结构

2. Conceptual Background of Related knowledges 相关知识和概念背景

2.1 Related concepts 相关概念

2.2 Overview of Augment/ Virtual reality applications AR/VR 应用概览

2.3 HCI (Human- Computer Interaction) and Interaction Design人机交互

3. How to Design and Develop a Virtual and Augment Reality Application for Education? 如何设计和开发用于教育的虚拟现实和增强现实应用

3.1 Educational AR/VR application characteristic 教育虚拟应用的特点

3.2 Investigating requirements for Educational AR/VR application

3.3 Educational AR/VR application Shortcomings and solutions \*\*\*

3.4 Interaction Designs in the VR/AR applications VR/AR应用中的交互设计

3.4.1 Human-Centered Design for VR/AR 以人为中心的VR/AR设计

3.4.2 Shortcomings and solutions 不足和解决方案

3.4.3 User interface design 用户界面设计

3.4 How to Improve UX? 如何提高用户体验

4. Developing 3 AR&VR applications cases 开发三个VR/AR案例

4.1 A Board game design for Math 幼儿棋盘游戏

4.1.1 Introduce and Design principle 介绍和设计原则

4.1.2 Project Implementation(Programing) 项目实现

4.2 VR Art Show VR艺术展

4.2.1 Introduce and Design principle 介绍设计原则

4.2.2 Project Implementation(Programing) 项目实现

4.3 AR&VR Chemistry Lab VR/AR化学实验室

4.3.1 Introduce and Design principle (LeapMotion and Oculus HMD)

4.3.2 Project Implementation(Programing)

4.4 Evaluate and Conclusion

4.4.1 Evaluation system

1, price-performance ratio (hardware, cost , portability…)

2, UX (diagram, interview)

3, Educational effect (questionnaire survey)

4.4.2 Evaluations for the 3 cases

5. Implementation Results analysis

5.1 [Objective for implementation](javascript:;)

5.2 Evaluations’ Conclusion

6. Conclusions and discussion

6.1 Conclusions

6.2 Limitations

6.3 Future directions in Augment and Virtual reality ---expanding applications ---Apply AR/VR mode in Other subjects (Match, physics, art, biology, geography…)

目录

1．介绍

1.1背景和研究环境

1.2目标和范围

1.3教育应用需求调查

1.4论文结构

2. 相关知识和概念背景

2.相关概念

2.2 AR/VR 应用概览

2.3人机交互

3. 如何设计和开发用于教育的虚拟现实和增强现实应用

3.1教育虚拟应用的特点

3.2调查教育AR/VR应用的需求

3.3教育AR/VR应用的不足和改进方法

3.4应用中的交互设计

3.4.1以人为中心的VR/AR设计

3.4.2不足和解决方案

3.4.3用户界面设计

3.4如何提高用户体验

4. 开发三个VR/AR案例

4.1幼儿棋盘游戏

4.1.1介绍和设计原则

4.1.2项目实现

4.2艺术展

4.2.1介绍设计原则

4.2.2项目实现

4.3化学实验室

4.3.1 (LeapMotion and Oculus HMD) 介绍设计原则

4.3.2项目实现

4.4评价和总结

4.4.1评价系统

1, price-performance ratio (hardware, cost , portability…)性价比

2, UX (diagram, interview) 用户体验（）

3, Educational effect (questionnaire survey) 教育效果

4.4.2 Evaluations for the 3 cases 分别评价

5. Implementation Results analysis

5.1 [Objective for implementation](javascript:;)

5.2 Evaluations’ Conclusion

6. Conclusions and discussion

6.1 Conclusions

6.2 Limitations

6.3 Future directions in Augment and Virtual reality ---expanding applications ---Apply AR/VR mode in Other subjects (Match, physics, art, biology, geography…)