Virtual Classmates: Embodying Historical Learners' Messages as Learning Companions in a VR Classroom through Comment Mapping

M. -Y. Liao, C. -Y. Sung, H. -C. Wang and W. -C. Lin, 2019 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), pp. 163-171

Maria Cunha (93089)
Sofia Vaz (92968)
Human Computer Interaction
28th April 2021

OUR CHOICE

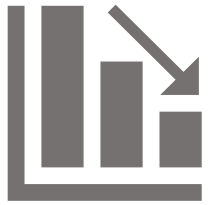
INTERESTING
AREA OF STUDY

ESPECIALLY
IMPORTANT
RIGHT NOW

A BIT WEIRD

REASONING BEHIND STUDY

SELF-PACED LEARNING IS GOOD, BUT...



LOWER SOCIAL CONNECTION

LOWER MOTIVATION

ISOLATION

CRITICAL TO ENHANCE LEARNERS' INTERESTS, MOTIVATION AND PERSISTENCE

HARDER TO REACH GOALS

HOW OTHERS TRIED TO SOLVE THIS PROBLEM

NON-VR ENVIRONMENTS

> BASED IN SECOND LIFE

VR PLATFORMS

> EDUCATIONAL GAMES

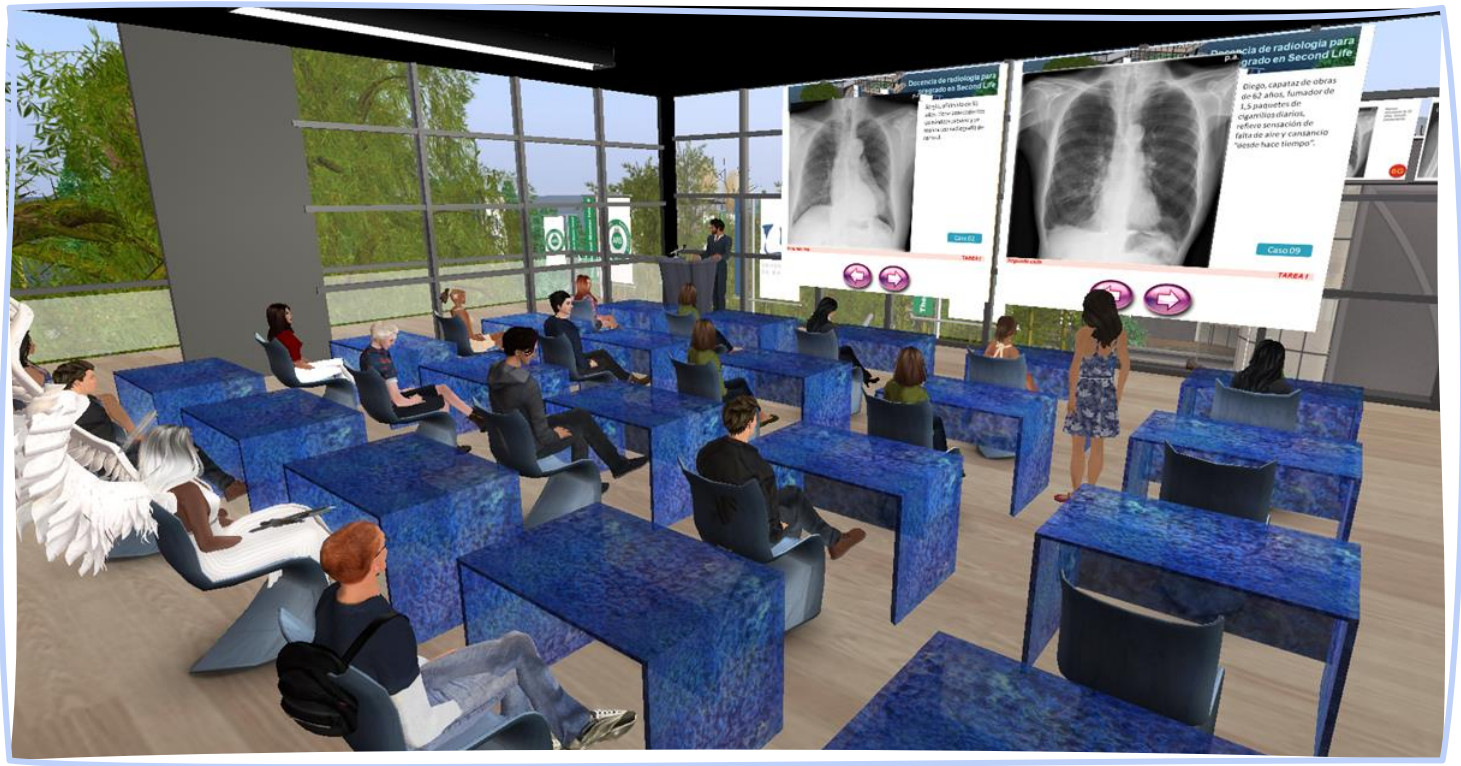
- NO SOCIAL INTERACTION

SYNCHRONOUS LEARNING

- NOT SELF-PACED

HOW OTHERS TRIED TO SOLVE THIS PROBLEM

- NON-VR ENVIRONMENTS (SECOND LIFE) -



RADIOLOGY EDUCATION GETS SECOND LIFE IN VIRTUAL WORLD

METHOD AND SYSTEM

VIRTUAL CLASSMATES

> TIME ANCHORED COMMENTS

? WHAT ARE TIME ANCHORED COMMENTS

ALSO... YOU CAN CHOOSE YOUR SEAT

METHOD AND SYSTEM

- COMMENT MAPPING -

AGGREGATION OF COMMENTS BY CATEGORY:

- GENERAL CONVERSATION
- NOTES
- OPINION
- QUESTION
- COMPLAINT
- COMPLIMENT
- OTHERS

EACH LEARNER IS CLASSIFIED

SIMILAR LEARNERS ARE MAPPED TO THE SAME VIRTUAL CLASSMATE

METHOD AND SYSTEM

- MOTION MAPPING -

CLASSIFICATION OF THE COMMENTS' EMOTION BY CATEGORY:

- ANGRY
- SADNESS
- JOY
- RELAXED

MAPPED A SUITABLE BEHAVIOR TO EACH COMMENT

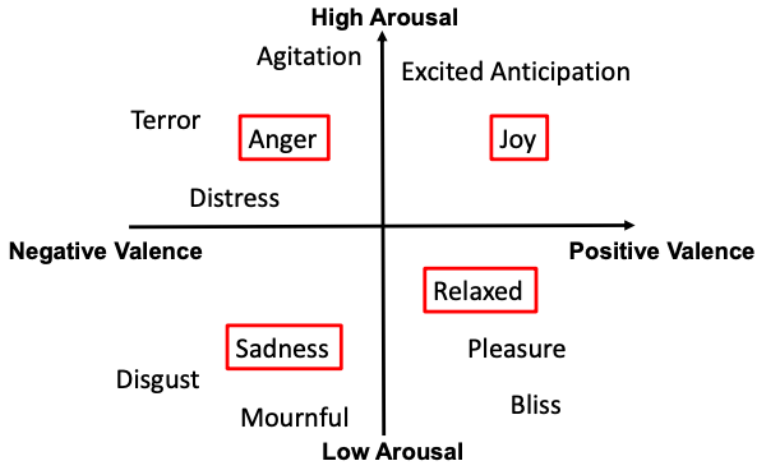


Figure 1: The four degrees of the emotions.

RESEARCH QUESTIONS

1-WOULD VIRTUAL CLASSMATES WITH COMMENT MAPPING TECHNIQUES INFLUENCE THE LEARNING EXPERIENCES OF LEARNERS?

2-WHETHER AND HOW THE NUMBER OF VIRTUAL CLASSMATES INFLUENCE THE LEARNING EXPERIENCES OF LEARNERS?

EXPERIMENTAL FACTORS

C1	C2	C3	C4	C5
5 virtual classmates	5 virtual classmates	20 virtual classmates	20 virtual classmates	Non-VR environment
With comment mapping	Without comment mapping	With comment mapping	Without comment mapping	Time anchored comments
18 participants	19 participants	19 participants	18 participants	20 participants

MEASURES

LEARNING OUTCOMES

- POST TEST – PRE TEST
- "WHAT IS A NORMAL GOOD?"
- "AFTER THE INCREASE IN INCOME, WHAT CHANGES DO WE USUALLY MAKE TO THE CONSUMPTION OF NORMAL, NEUTRAL, AND INFERIOR GOOD?"

INTERVIEW

- SUPPLEMENT SURVEY DATA
- USER EXPERIENCE

SURVEY

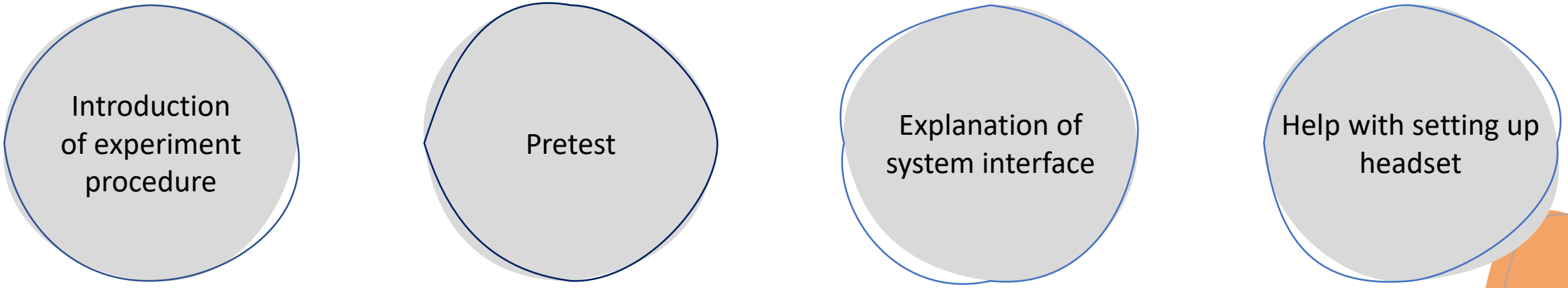
- 14 QUESTIONS
- SCALE OF 1-5
- USED TO MEASURE SOCIAL AND ATTITUDINAL INFLUENCES

PARTICIPANTS AND PROCEDURE

100 PARTICIPANTS - 54 FEMALES AGED 18-35 (MEAN=22.7)

ALL THE PARTICIPANTS HAD PRIOR EXPERIENCE WITH ASYNCHRONOUS ONLINE LEARNING (COURSERA, UDEMY,…)

93% SCORED LESS THAN 50/100 IN THE PRETEST

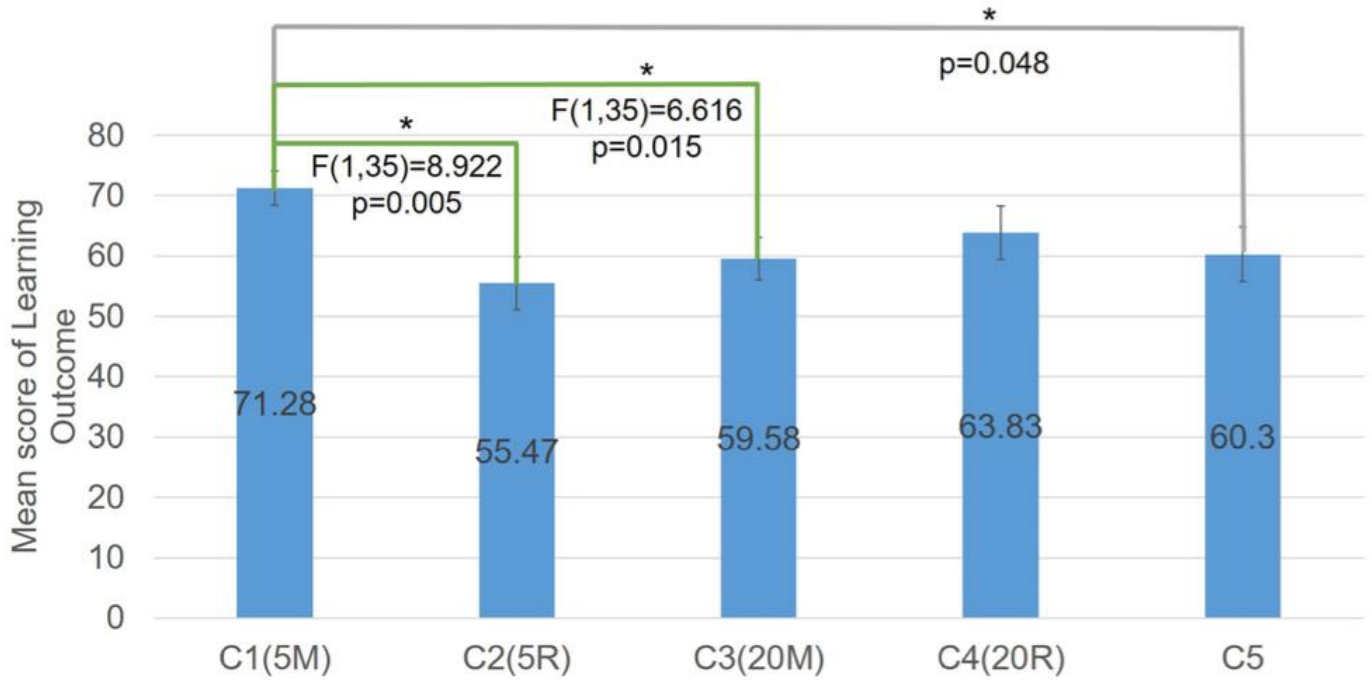


OCULUS RIFT DK2 WITH 960 X 1080 RESOLUTION PER EYE AND 72HZ REFRESH RATE + PC WITH MICROSOFT WINDOWS 10 OPERATING SYSTEM, INTEL CORE I7-6700K PROCESSOR, 32GB RAM AND NVIDIA GEFORCE GTX 1070

RESULTS

- LEARNING OUTCOMES -

"TO KNOW WHOM YOU SHOULD LOOK AT WHEN YOU WANT TO FIND THE KEY POINTS" -C1



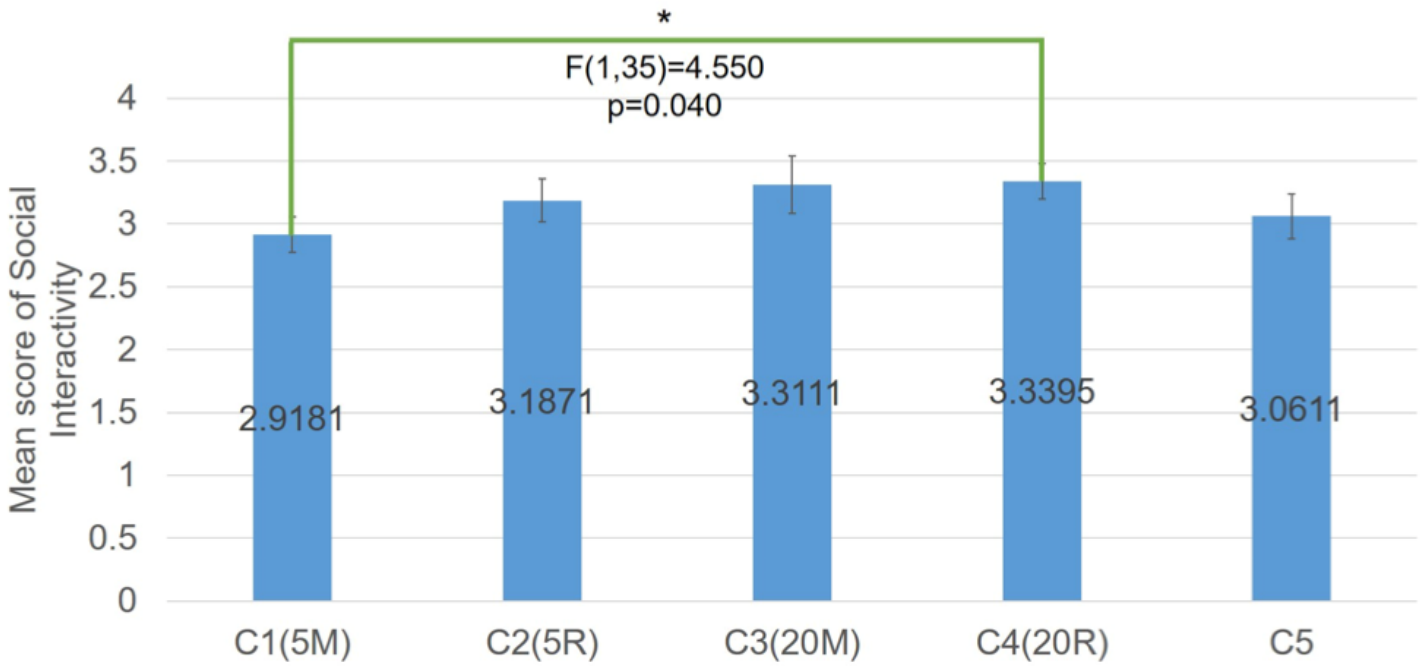
C1 HAS BETTER LEARNING OUTCOMES THAN C2 AND C3

C1 HAS BETTER LEARNING OUTCOMES THAN C5

✓ WITH ONLY 5 CLASSMATES, COMMENT MAPPING WOULD BE MORE HELPFUL

RESULTS

- SOCIAL OUTCOMES -



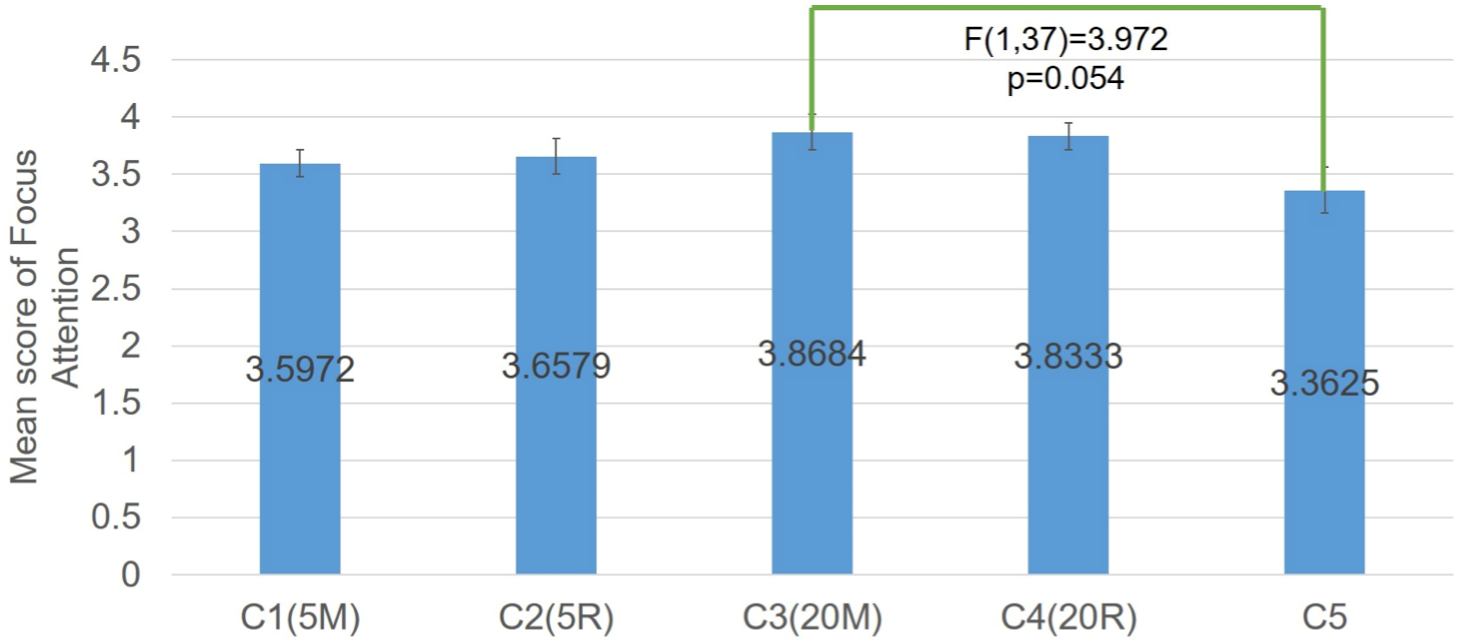
"IT MADE ME FEEL LESS ALONE LIKE A GENERAL ONLINE COURSE WHERE I WAS ALONE" -C5

- C1 HAS LOWER SOCIAL INTERACTIVITY THAN C4

✓ 20R HAS MORE SOCIAL INTERACTIVITY THAN 5M

RESULTS

- FOCUS ATTENTION -



"THE CLASSMATES' COMMENTS WERE SOMETIMES TOO DENSE, AND THEN I DIDN'T KNOW WHERE TO LOOK" -C2

C3 HAS MORE FOCUS ATTENTION THAN C5

✓ 20R HAS MORE FOCUS ATTENTION THAN WITHOUT VR

DISCUSSION AND ACQUIRED KNOWLEDGE

LEARNING OUTCOMES

BEST IN C1 (5M)

WITH COMMENT MAPPING -> LESS CLASSMATES

W/O COMMENT MAPPING -> MORE CLASSMATES

SOCIAL INTERACTIVITY

BEST IN C4 (20R)

MORE CLASSMATES ALWAYS YIELDS BETTER RESULTS

FOCUS ATTENTION

BEST IN C3 (20M)

RESULTS CLOSE TO EACH OTHER

IN CONCLUSION...

YOU CAN'T HAVE YOUR CAKE AND EAT IT TOO

Virtual Classmates: Embodying Historical Learners' Messages as Learning Companions in a VR Classroom through Comment Mapping

M. -Y. Liao, C. -Y. Sung, H. -C. Wang and W. -C. Lin, 2019 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), pp. 163-171

Maria Cunha (93089)
Sofia Vaz (92968)
Human Computer Interaction
28th April 2021