

## Validation of Training Satisfaction Survey

Cassandra Domingo

*Embry-Riddle Aeronautical University*, [domingc9@my.erau.edu](mailto:domingc9@my.erau.edu)

Nicholas Nieves

*Embry-Riddle Aeronautical University*, [nievesn2@erau.edu](mailto:nievesn2@erau.edu)

Robert Thomas Dr

*Embry-Riddle Aeronautical University*, [thomasr7@erau.edu](mailto:thomasr7@erau.edu)

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Domingo, Cassandra; Nieves, Nicholas; and Thomas, Robert Dr, "Validation of Training Satisfaction Survey" (2023). *National Training Aircraft Symposium (NTAS)*. 9.  
<https://commons.erau.edu/ntas/2022/presentation/9>

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# Validation of Training Satisfaction Survey

**Cassandra Domingo, MS**

*PhD Student in the Department of Human Factors and Behavioral Neurobiology, ERAU Daytona Beach*

**Robert “Bob” Thomas, PhD**

*Assistant Professor & Chief Ground Instructor, College of Aviation, ERAU Daytona Beach*

**Nicholas Nieves**

*Aviation Safety Coordinator, ERAU Daytona Beach*

**Gary Carter**

*Assistant Professor in the College of Aviation, ERAU Daytona Beach*

**Thomas Barcza**

*College of Aviation, ERAU Daytona Beach*



# Why Develop the Survey?

The researchers in the College of Aviation are undertaking many new virtual reality projects; especially VR training to recognize visual illusions

How do you measure training success?

- Knowledge
- Self-Efficacy
- Training satisfaction survey (TSS)

# Training Satisfaction

Many studies/references have shown that enjoyable training methods lead to more effective learning

(Giannakos, 2013; Kirkpatrick, 2016; Long, 2005; Lin, 2020; Rano, 2018; van Limpt, 2020)

Had a hard time finding a TSS that “fit” new VR environment & application

Decided to validate our own TSS

# Development of the Survey

Began with a literature review focusing on **training satisfaction** and **potential uses in Virtual Reality**

Decided on a Likert Scale Survey

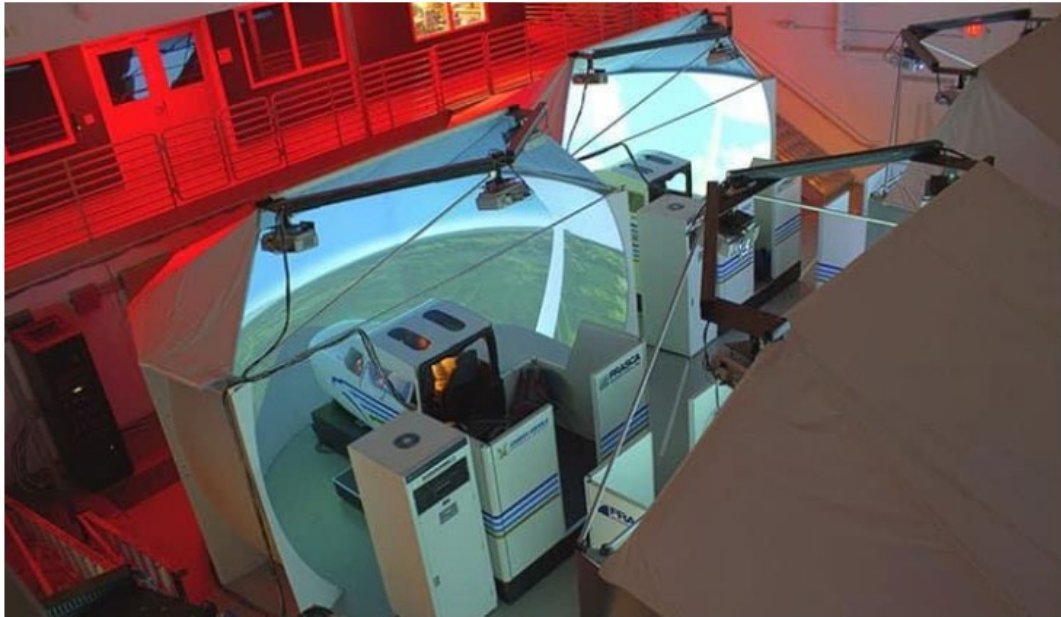
Searched through already validated surveys statements that would fit our VR training applications

Produced statements in 3 categories:

- **Enjoyment, relevance, and technical satisfaction**
- Also, some open-ended questions for more detailed feedback

# The Survey

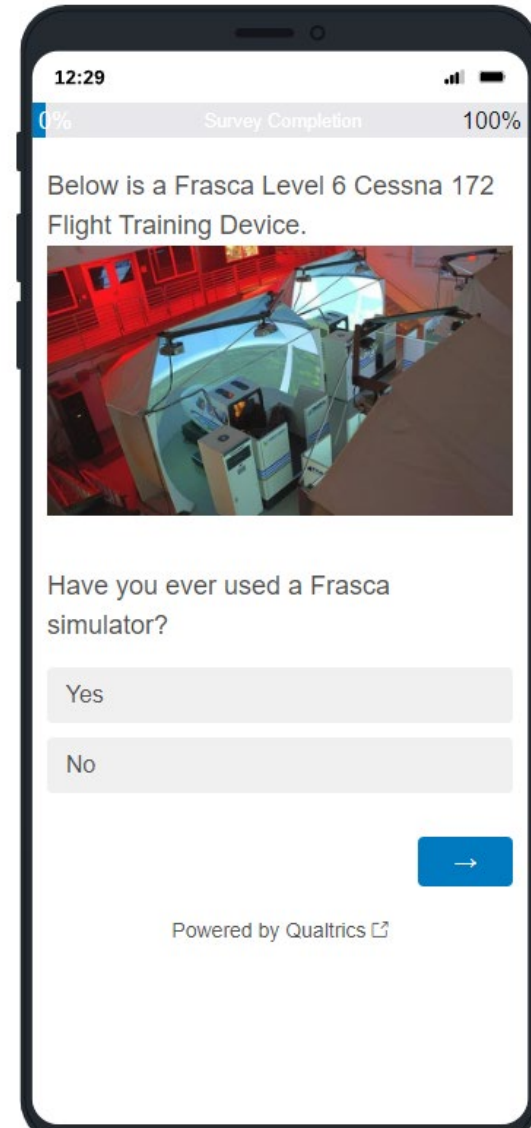
Below is a Frasca Level 6 Cessna 172 Flight Training Device.



Have you ever used a Frasca simulator?

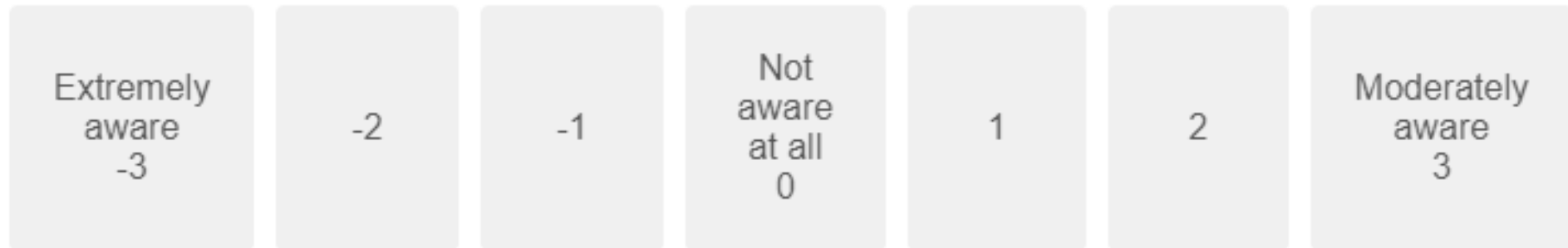
Yes

No



# The Survey

How aware were you of the real world surrounding while navigating in the virtual world (I.e., sounds, room temperature, other people, etc.)?



# Items from the Literature

	Items
<b>Enjoyment</b>	I enjoyed the training very much. (Fergonese, 2018)
	I am satisfied with the quality of training provided? (Morgan, 2000)
	The training material was fun. (Brown, 2005)
	This training held my interest. (Kirkpatrick, 2016)
	I would recommend this training to other students. (Kirkpatrick, 2016)
<b>Relevance</b>	I am satisfied with the relevance of training received to flight tasks. (Morgan, 2000)
	I am satisfied with the relevance of the training content to flight tasks. (Morgan, 2000)
	I will keep the training in good memory. (Fergonese, 2018)
	The training provided a useful environment for flight tasks. (Brown, 2005)
	The training was relevant to the flight tasks. (Brown, 2005)
<b>Technical Satisfaction</b>	The lesson was easy to follow. (Kirkpatrick, 2016)
	The lesson was easy to navigate. (Kirkpatrick, 2016)
	The technology interface was easy to use. (Brown, 2005)
	I am satisfied with the technology interface. (Brown, 2005)
	The technology allowed for easy review. (Brown, 2005)
<b>Overall Satisfaction</b>	What did you like most about the training? (Dagenais, 2011)
	What did you like least about the training? (Dagenais, 2011)
	Do you have any suggestions to improve the training? (Dagenais, 2011)



# Validation of the Survey

N = 159 Participants

Exploratory factor analysis

- Direct Oblimin
- Kaiser's Criterion

Enjoyment &  
Technology Satisfaction  
**65.25%**

Question#	Item	Loading
<i>Factor one: Enjoyment</i>		
13	I feel that type of training should be required for student pilots.	0.921
11	I wish I had this type of training when I was learning how to fly.	0.918
12	I want my students to use this type of training.	0.812
1	I enjoyed the training very much.	0.72
4	I would recommend this training to other students.	0.692
2	I am satisfied with the quality of training provided.	0.665
10	I was satisfied with this type of computer-based learning environment.	0.61
9	I am satisfied with this type of learning experience.	0.52
<i>Factor two: Technology Satisfaction</i>		
5	The lessons were easy to follow.	0.908
6	The lessons were easy to navigate.	0.888
8	The training was relevant to the training objectives.	0.567
7	The training provided a useful environment to learn.	0.525
3	This training held my interest.	0.513

# Summary of Factor Analysis

TSS aimed to measure training satisfaction using three theoretically based subfactors

- Relevance
- Enjoyment technology
- Satisfaction

Data supports a two-factor solution: **enjoyment & technology satisfaction.**

# Summary of Factor Analysis

## Limitations

- Preliminary sample size small

- Scale may have too few items

## Future Studies

- Larger sample size

- Conduct CFA

# References

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# The Survey – Open Ended

## Overall Satisfaction:

- What did you like most about the training? (Dagenais, 2011)
- What did you like least about the training? (Dagenais, 2011)
- Do you have any suggestions to improve the training? (Dagenais, 2011)

# The Survey – Open Ended

Likes	Fidelity	Low Cost	Practice	Safe Practice	Adaptability	Easy
Count	29	23	40	14	8	4

Dislikes	"Feels Off"	Poor Graphics	Simulator Controls too Sensitive	Costly	Difficult Controls	Sim Induced Sickness
Count	17	15	8	6	4	3

Suggestions	Improve Graphics	Update Sim Equipment	Improve Control Sensitivity
Count	27	14	5

# *Thank you for your time*

Cassandra Domingo, MS  
*domingc9@my.erau.edu*

Robert “Bob” Thomas, PhD  
*thomasr7@erau.edu*

Nicholas Nieves  
*nievesn2@erau.edu*

Gary Carter  
*Carte85f@erau.edu*

Thomas Barcza  
*barczat@my.erau.edu*

