818 Mobility Support Advisory Squadron

LANGUAGE TRAINING NEXT: VIRTUAL REALITY SECOND-LANGUAGE IMMERSION

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Interagency Language Roundtable Meeting, Training Committee
June 25, 2021

"Peace through Partnerships"

The Future is NOW

VIRTUAL REALITY IN LANGUAGE LEARNING

Innovating the Future

Overview

- Ten years of the 818th Mobility Support Advisory Squadron
  - Who we are
  - Our Mission
- The History of Virtual Reality
- Virtual Reality enters the Language Arena
- Adapting VR for French language at the 818 MSAS
- Researching the current state of VR and AI
- Language Training Next (LTN):
  - Pushing the boundaries with VR and AI
  - Creating useful, effective, and fun VR/AI
- Survey on Language Use in the Field
- Imagineering the future of VR/AI
- Solutions
- Questions

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Ten years of the 818th Mobility Support Advisory Squadron

- The 818th MSAS was established in 2011 to create and foster partnerships with our allied African partner nations to support and develop their military capabilities and ensure US National Security interests

- The 818th MSAS helps narrow the capability gap of our African partners to overcome challenges through deliberate capacity building efforts. The 818 MSAS has established long-term and enduring training programs, covering a vast array of Air Force functions, while creating genuine relationships with our African partners on behalf of the United States government

818 Mobility Support Advisory Squadron

- **Mission Statement:**
  - **Build, sustain, and expand the relationships with and the capabilities of Partner Nation Air Forces in direct support of the Combatant Commander Requirements**

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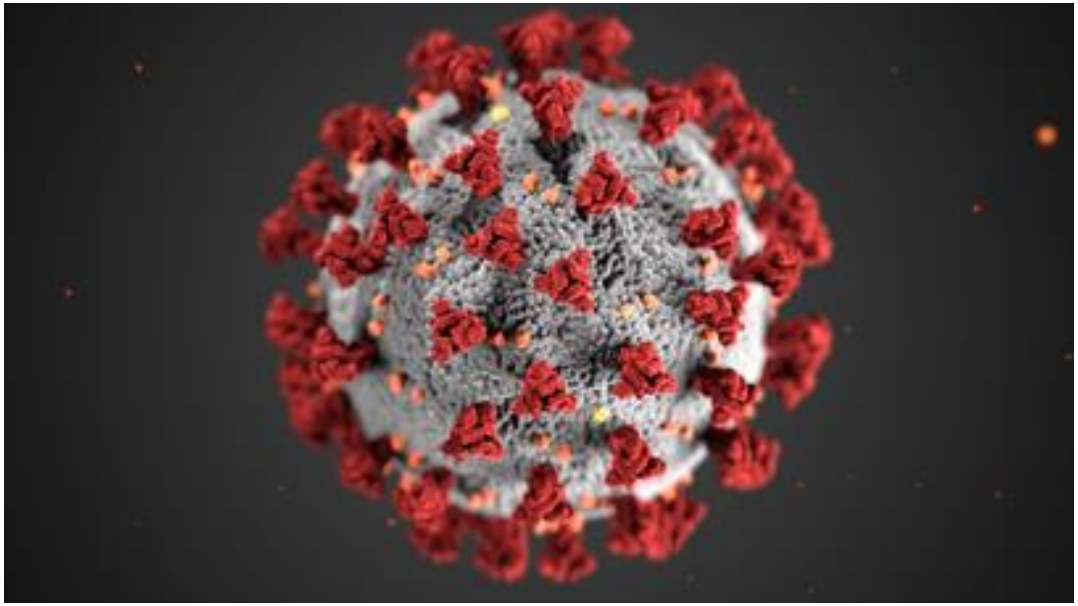
Current Limitations



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Building Partnerships

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Strategic Implications

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AFSC	Assgn	Auth'd
• 1A2 Aircraft Loadmaster	5	4
• 1C1 Air Traffic Control	1	1
• 1C3 Command & Control Operations	1	2
• 1C7 Airfield Management	2	3
• 1C8 Ground Radar Systems	0	3
• 1N0 All Source Intelligence Analyst	3	3
• 1P0 Aircrew Flight Equipment	1	1
• 1T0 SERE	2	2
• 2A5 Airlift/Special Mission Aircraft Maintenance	4	3
• 2F0 Fuels	3	2
• 2S0 Materiel Management	3	3
• 2T2 Air Transportation	4	3
• 2T3 Mission Generation Vehicular Equipment Maintenance	3	3
• 3D1 RF Transmissions	2	4
• 3E0 Electric Power Pro	1	2
• 3E5 Engineering	2	2

AFSC	Assgn	Auth'd
• 3E7 Fire Protection	1	1
• 3P0 Security Forces	6	6
• 3S0 Personnel	1	1
• 3S3 Manpower	0	1
• 4N0 Aerospace Medical Service	2	2
• 8F0 First Sergeant	0	1
• 9L0 Interpreter/Translator	2	3
• 11M Mobility Pilot	4	4
• 12M Mobility Combat Systems Officer	2	3
• 13M Airfield Operations	0	1
• 16F Regional Affairs Strategist	3	3
• 17D Network Operations	2	2
• 21R Logistics Readiness	4	5
• 32E Civil Engineering	3	3
• 46F Flight Nurse	1	1

68 Assigned/78 Authorized

- ***The History of Virtual and Augmented Reality***
  - **19th Century Panoramic Paintings**

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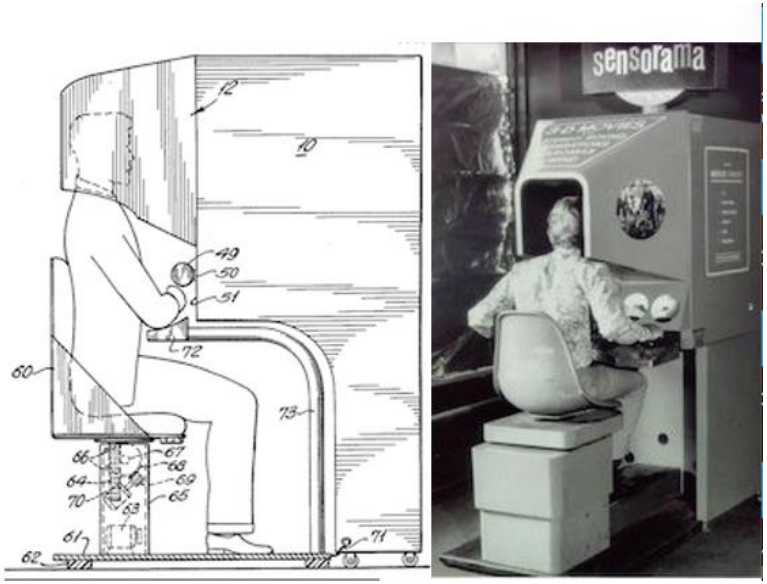

- ***The History of Virtual Reality***
  - **1838 - Stereoscopic Photos & Viewers**
  - **1929 – Linktrainer – the First Flight Simulator**
  - **1939 View-Master (and in 2014, Google Cardboard)**

1930s Science Fiction – Stanley G. Weinbaum's "Pygmalion's Spectacles"

  - **1950s – Morton Heilig's Sensorama**
  - **1960 – The first VR Head mounted Display**

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- *The History of Virtual Reality, cont'd*

- 1961 – Headsight – First motion tracking HMD
- 1966 – Furness' Flight Sim
- 1968 – Sword of Damocles (head mounted display, connected to a computer)
- 1969 – Artificial Reality (Myron Krueger's computer-generated environments)
- 1982 – Sayre Gloves (VR gloves wired to computer system using optical sensors to detect finger movement)

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- ***The History of Virtual Reality, cont'd***

- **1986– Furness invents the Super Cockpit flight simulator**
- **1987 – Virtual Reality – the name was born when Jaron Lanier, founder of the Visual Programing Lab (VPL) coined the term. VR goggles cost $9400, EyePhone HRX, $49,000 and gloves $9000.**
- **1989 – NASA gets into VR, giving it a big boost**
- **1991 – Virtuality Group Arcade Machines**
- **1993 – SEGA announces VR glasses**

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- ***The History of Virtual Reality, cont'd***
  - **1997 – Landmark VR PTSD Treatment**
  - **2007 – Google Street View**
  - **2010 – Street View goes 3D**
  - **2010 – Palmer Luckey creates Oculus VR Headset, later the Oculus Rift in 2012, starting the VR Revolution**
  - **2014 – Facebook buys Oculus**
  - **2014 - Sony announces VR Project**
  - **2018 – Standalone VR (Oculus Go and then Quest) rises at the expense of Mobile VR**
  - **2019 – Mixed Reality emerges blending real and virtual worlds**

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- *Virtual Reality Enters the Language Arena*
  - 2014 – Learn Immersive
    - 2016 – Immersive becomes Lingoland
  - 2017 - Mondly VR/AI with avatars
  - 2018 – Expanded Unity Real-Time cross-platform development engine for Augmented/VR (originally from 2005)
  - 2019 – Immerse and Transparent Language
    - Interactive avatars in job-related environments
    - Virtual Language Experience Platform (VLEP)
    - Aligned to CEFR language levels for English instruction

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- ***Adapting VR for French language at the 818 MSAS***
  - **Language Learning Center with VR/AI capability**
    - **Oculus Rift S and Oculus Quest headsets**
    - **Acer Predator AG3-710 Gaming Desktop Computer**
    - **Mondly VR Language Learning software scenarios at ILR L1**
    - **Integration into French Initial Acquisition Course once a week over the 14-week program**

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- ***Researching the Current State and capabilities of VR with AI***
  - **Alelo, Inc.– Language and Culture AI**
    - **Enskill for ESL**
    - **Effective and Persuasive Communication**
  - **Univ. of Southern Calif. Institute for Creative Technologies/MxR Lab**
  - **Anduril Technologies (Palmer Luckey)**
  - **Artemis Defense Institute**
  - **Moth & Flame**
    - **Interactive VR**

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https://vimeo.com/467769735/3bae9bbfb6

INTRODUCING **LANGUAGE TRAINING NEXT (LTN)**

Current language training solutions are outdated, costly, and infrequent, resulting in learning stagnation and capability loss. This led us to ask:

What if every Air Advisor had their own personal VR simulator?

LTN utilizes disruptive VR technology to enable Air Advisors to learn better, faster.

Language Training Features

LTN allows students to simulate real world conversations in a portable, AI-driven virtual environment where lesson content varies according to student's demonstrated proficiency based on ILR and OPI skill levels.

Culture Training Features

Scenario based training puts students into complex, real-world scenarios where they can practice skills related to conflict de-escalation, navigation, key leader engagements, in-country civilian interactions, as well as other key routine and infrequent valuable experiences.

Student Performance Tracking

Digitally track and log student performance across all training modules. Gain key insight into student readiness, allowing for proficiency advancements based on student competency.

Personalized Curriculum Development

Instructors can design personalized curriculum by selecting lessons and scenarios from a content library that results in tailored training. This alleviates the need for costly travel expenses for specialized training while maximizing the efficiency of language and culture training lessons.

LANGUAGE TRAINING NEXT

Survey on Language Use In the Field

- **Purpose of Survey was to determine:**
  - How language is used in the Field
  - What type of language is employed
  - What linguistic situations are encountered
  - Which skills are used most frequently and which skills are most essential
  - What language levels are needed in each skill

- 20 Air Advisor reported language engagements in 5 countries:
  - Mauritania, Cameroon, Tunisia, Chad, and Mali

Survey on Language Use in the Field

➢ Language Proficiency by Skill in Africa

Name/ Level	Reading	Listening	Speaking
JR /MC	2	1	1+
AS / SA	3	3	2+
JV / TS	1+	1	1+
JT / BA	1+	1	1+
RY / SA	1+	1	1+
ZM / MC	2	1+	1+
DBD / MC	1+	1+	1+
JH / TS	1+	1+	1
BB /SA	1	1	1
RY / SA	1+	1	1+
DJ / SA	1+	1	1
SM / BA	1	0	1

Name/ Level	Reading	Listening	Speaking
MG /MC	3	2+	2
JN/BA	1+	1	1
AK / TS	1+	0	1
RY/SA	1+	1	1+
JC / TS	1+	1	1
MM / MC	3	3	1+
JF / MC	3	1+	1+
CD/BA	2+	3	1+
AVERAGE	2	1.44	1.55
(.75 = + level)			

Survey on Language Use in the Field

Language Interactions
Partner Nation Personnel (13)
Airport (13)
Stores (9)
Taxis (10)
Government officials (6)
Public (5)
Soccer Games (2)
Drivers (2)
Other (1)

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Survey on Language Use in the Field

Comments

Ordering food, asking for hotel room to be unlocked, small-talk with drivers, conversations with Partner Nation personnel, talking with cashiers in stores. Much of language use in the field was doing daily tasks involving locals in the country. 50% of time conversing with Partner Nation personnel was in French, although interpreters were there.

Neither the airline attendant in Yaounde nor Garoua spoke English. Understanding French was imperative in order to comprehend the directions that were given regarding extra baggage fees among other things. Neither of our drivers spoken fluent English. French was necessary to communicate directions.

While it is always beneficial to be able to converse with the Partner/Nation, my language skills were extremely handy when I got sick and the embassy had to refer me to a local clinic. I went to an international clinic where the doctor on staff was French. My ability to not only describe what I was feeling, but also to understand what she was asking me, was crucial to navigating through the medical process. I was able to get the medical care/attention I needed to enable me to complete the mission.

Survey on Language Use in the Field

Comments, cont'd

During our initial Key Leader Engagement, I was able to communicate with the Base Commander of the Malian Air Force Base in French. I was able to communicate what I needed from the Malian Air Force for the two-week engagement. I worked with my interpreter to get feedback and help with the French language. He provided assistance and I was able to communicate with my students successfully. The French language is extremely important. It helps our mission to build partnership because it brings us closer tour partner nations.

Authorization to release communications equipment with Tunisian Customs; checking into the Airline; coordination of base activities and graduation ceremony; briefing the Chief of Staff of the Tunisian Air Force on the activities of the Security Forces personnel; negotiating with local law enforcement while during a traffic stop

Speaking with airport officials in French was essential when we had to re-book our flight and retrieve our luggage from the airplane. Used French to communicate with key leader staff while on base in Garouda

Topics of interaction included work, culture, news, family weekend activities, everyday life, classroom instruction on weapons, directions

Survey on Language Use in the Field

Summary and Conclusions

- **Summary and Conclusions**
  - Average DLPT Scores: Reading 1+, Listening 1 (high), Speaking between 1 and 1+
    - MCs are at 3/2+, 2/1+ and 1+/1+ levels of proficiency
    - TSs are at 1+/1+ and 1+/1 levels of proficiency
    - SAs range between 1/1 and 3/3
    - BAs range between 1/1 and 1+/1+
  - Language proficiency at level 1/1+ is essential during African Partner Nation Missions
    - Majority of daily communications is conducted in French with locals in hotels, taxis/drivers, airport, and stores but some training is done in French. Official interpreters need 3/3 or higher proficiency
    - Need to deal on occasion with situations with complications

Survey on Language Use in the Field

- **Summary and conclusions (cont'd)**
  - Language proficiency at level 1+/2 is desirable for communication with Partner Nation personnel
    - Explaining/communicating mission tasks
  - Language proficiency at level 2 and above is desirable for communication with government officials
    - Abstract and hypothetical situations, supporting opinions
  - While the majority of second language use occurs in situations technically requiring 1+/1 proficiency, because interaction is live with native speakers, proficiency at L2 to L3 is highly desirable in many of the interactions with Partner nation personnel and officials
  - Speaking and Listening are the two most critical skills for Air Advisors
  - Integrate ILR Interpreter Proficiency guidelines into USAF Interpreter Training
  - Ensure that USAF Interpreters attend formal Interpreter courses, i.e. those offered through Middlebury's Monterey Institute of International Studies

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- ***Imagineering the Future of VR/AI***
  - **Real World Mission-related language and culturally-based scenarios with VR/AI in country-specific locations**
  - **Virtual worlds where AI provides encounters with multiple avatars at language-appropriate ILR adaptive level interactions**
  - **Language and cultural diagnostics for evaluation, assessment, and advancement/improvement**

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- ***Solutions***

  - **AFWERX grant for $750,000 February 2021 to develop "Language Training Next" for the 818 MSAS**
    - **Modules addressing real-world mission scenarios**
    - **Adaptive Conversations at appropriate ILR proficiency levels and with relevant cultural content**

  - **Sophisticated Virtual Reality- and Artificial Intelligence-based training will further facilitate the improvement of language proficiency and the raising of cultural awareness to enable our Airmen to succeed in their Mission to bring Peace through Partnerships on the African continent**

QUESTIONS

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