



UXARcis Questionnaire

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Scientific Evidence of the UXARcis

The UXARcis questionnaire is based on the following publications:

- Graser, S., Schrepp, M., Böhm, S. (2024). UXAR-CT – An Approach for Measuring UX for Mobile Augmented Reality Applications in Corporate Training. In: Wei, J., Margetis, G. (eds) Human-Centered Design, Operation and Evaluation of Mobile Communications. HCII 2024. Lecture Notes in Computer Science, vol 14737. Springer, Cham. https://doi.org/10.1007/978-3-031-60458-4_15
- Graser, S., Schrepp, M., Böhm, S. (2024). Construction of the UXAR-CT – a User eXperience Questionnaire for Augmented Reality in Corporate Training, CENTRIC 2024: The Seventeenth International Conference on Advances in Human-oriented and Personalized Mechanisms, Technologies, and Services, Venice, Italy, ThinkMind, pp. 14-22. https://www.thinkmind.org/library/CENTRIC/CENTRIC_2024/centric_2024_1_20_30009.html
- Graser, S., Böhm, S. (2025). The Influence of System Characteristics on the User Experience of Augmented Reality Applications: An Experimental Approach in Corporate Training, 2025 International Conference on Intelligent Computing and Virtual & Augmented Reality Simulations (ICVARS), Birmingham, United Kingdom, 2025, pp. 56-65, doi: 10.1109/ICVARS66454.2025.11198670
- Graser, S., Schrepp, M., Krüger, J.M., Böhm, S. (2026). Development of an Innovative UX Measurement Approach for Augmented Reality in Corporate Training. In: Schrepp, M. (eds) HCI International 2025 – Late Breaking Papers. HCII 2025. Lecture Notes in Computer Science, vol 16341. Springer, Cham. https://doi.org/10.1007/978-3-032-13083-9_11

Measurement Items

Measurement Items (English)

The Content in the brackets [] **must be adjusted** in relation to the AR application.

<i>S</i>	Overall, I am satisfied with the application's support for learning.
<i>PE1</i>	It is easy/simple to learn how to use the application
<i>PE2</i>	The information in the application is easy to understand
<i>PE3</i>	The operation of the application is logical
<i>EF1</i>	Using the application for learning is practical
<i>EF2</i>	The application helps me to learn faster
<i>EF3</i>	The application improves my learning and work performance
<i>DE1</i>	The application is easy to control
<i>DE2</i>	I always have control over the application at every step.
<i>DE3</i>	It is easy to find your way around the application.
<i>US1</i>	The application helps me to learn
<i>US2</i>	It is a great advantage to use the application when learning
<i>US3</i>	I find the application useful for learning
<i>CL1</i>	The information on the display is clearly laid out
<i>CL2</i>	The information on the display is clear
<i>CL3</i>	It's easy to find the information I need
<i>Con1</i>	The [virtual elements] in the [real environment] were important for learning.
<i>Con2</i>	The [virtual elements] matched well with the [real learning situation]
<i>Con3</i>	The [virtual elements] were connected to [physical objects] at the appropriate time
<i>Con4</i>	The combination of [physical and virtual elements] was useful for learning
<i>Con5</i>	The simultaneous use of [physical and virtual elements] was useful for learning
<i>Con6</i>	The linking of [physical and virtual elements] was easy to understand
<i>Spa1</i>	The spatial connection between [physical and virtual elements] was easy to understand
<i>Spa2</i>	The spatial connection of the [virtual elements] was easy to understand
<i>Spa3</i>	The spatial connection between [physical and virtual elements] was useful for learning
<i>Spa4</i>	The spatial connection of the [virtual elements] was useful for learning
<i>Spa5</i>	The [virtual elements] in 3D was useful for learning
<i>Spa6</i>	The placement of the [virtual elements] was useful for learning
<i>Int1</i>	The interaction with the [virtual elements] was useful for learning
<i>Int2</i>	The interaction with the [physical objects] was useful in learning
<i>Int3</i>	The [virtual elements] were easy to use
<i>Int4</i>	The [physical objects] were easy to use
<i>Int5</i>	When interacting with the [physical object], I received useful feedback from [virtual elements]
<i>Int6</i>	When interacting with the [virtual element], I received useful feedback from [physical objects]

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Measurement Items (German)

<i>S</i>	Insgesamt bin ich mit der Unterstützung der Anwendung fürs Lernen zufrieden.
<i>PE1</i>	Es ist leicht/einfach zu lernen, wie man die Anwendung benutzt.
<i>PE2</i>	Die Informationen der Anwendung sind einfach zu verstehen.
<i>PE3</i>	Die Bedienung der Anwendung ist logisch.
<i>EF1</i>	Die Nutzung der Anwendung fürs Lernen ist praktisch.
<i>EF2</i>	Die Anwendung hilft mir schneller zu lernen.
<i>EF3</i>	Die Anwendung verbessert meine Lern- und Arbeitsleistung.
<i>DE1</i>	Die Anwendung ist einfach zu kontrollieren.
<i>DE2</i>	Ich habe bei allen Schritten immer die Kontrolle über die Anwendung.
<i>DE3</i>	Es ist einfach sich in der Anwendung zurechtzufinden.
<i>US1</i>	Die Anwendung hilft mir beim Lernen.
<i>US2</i>	Es ist von großem Vorteil, die Anwendung beim Lernen zu nutzen.
<i>US3</i>	Ich finde die Anwendung fürs Lernen nützlich.
<i>CL1</i>	Die Darstellung der Informationen im Display ist übersichtlich.
<i>CL2</i>	Die Darstellung der Informationen im Display ist klar.
<i>CL3</i>	Es ist einfach, die Informationen zu finden, die ich benötige.
<i>Con1</i>	Die [virtuellen Elemente] in der [realen Umgebung] waren wichtig für das Lernen.
<i>Con2</i>	Die [virtuellen Elemente] passten gut zur [realen Lernsituation]
<i>Con3</i>	Die [virtuellen Elemente] waren zur passenden Zeit mit [physischen Objekten] verbunden
<i>Con4</i>	Die Verknüpfung von [physischen und virtuellen Elementen] war nützlich für das Lernen
<i>Con5</i>	Die gleichzeitige Verwendung von [physischen und virtuellen Elementen] war nützlich für das Lernen
<i>Con6</i>	Die Verknüpfung von [physischen und virtuellen Elementen] war einfach zu verstehen
<i>Spa1</i>	Die räumliche Verbindung zwischen [physischen und virtuellen Elementen] war einfach zu verstehen
<i>Spa2</i>	Die räumliche Verbindung der [virtuellen Elementen] war einfach zu verstehen
<i>Spa3</i>	Die räumliche Verbindung zwischen [physischen und virtuellen Elementen] war nützlich beim Lernen
<i>Spa4</i>	Die räumliche Verbindung der [virtuellen Elementen] war nützlich beim Lernen
<i>Spa5</i>	Die [virtuellen Elemente] in 3D war nützlich für das Lernen
<i>Spa6</i>	Die Platzierung der [virtuellen Elemente] war nützlich für das Lernen
<i>Int1</i>	Die Interaktion mit den [virtuellen Elementen] war nützlich beim Lernen
<i>Int2</i>	Die Interaktion mit den [physischen Objekten] war nützlich beim Lernen
<i>Int3</i>	Die [virtuellen Elementen] waren einfach zu bedienen
<i>Int4</i>	Die [physischen Objekte] waren einfach zu bedienen
<i>Int5</i>	Bei der Interaktion mit dem [physischen Objekt] habe ich nützliche Rückmeldung durch [virtuelle Elemente] erhalten
<i>Int6</i>	Bei der Interaktion mit dem [virtuellen Element], habe ich nützliche Rückmeldung durch [physische Objekte] erhalten

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Final, randomized UXARcis questionnaire

Code	Items
S	Overall, I am satisfied with the application's support for learning.
EF3	The application improves my learning and work performance
CL2	The information on the display is clear
PE3	The operation of the application is logical
CL1	The information on the display is clearly laid out
DE1	The application is easy to control
EF1	Using the application for learning is practical
PE2	The information in the application is easy to understand
PE1	It is easy/simple to learn how to use the application
US1	The application helps me to learn
DE2	I always have control over the application at every step.
DE3	The application always responds comprehensible
CL3	It's easy to find the information I need
EF2	The application helps me to learn faster
US2	It is a great advantage to use the application when learning
US3	I find the application useful for learning
Spa5	The [virtual elements] in 3D was useful for learning
Int4	The [physical objects] were easy to use
Spa2	The spatial connection of the [virtual elements] was easy to understand
Con4	The combination of [physical and virtual elements] was useful for learning
Con2	The [virtual elements] matched well with the [real learning situation]
Spa4	The spatial connection of the [virtual elements] was useful for learning
Spa1	The spatial connection between [physical and virtual elements] was easy to understand
Con1	The [virtual elements] in the [real environment] were important for learning.
Int2	The interaction with the [physical objects] was useful in learning
Int6	When interacting with the [virtual element], I received useful feedback from [physical objects]
Con6	The linking of [physical and virtual elements] was easy to understand
Int3	The [virtual elements] were easy to use
Int1	The interaction with the [virtual elements] was useful for learning
Con5	The simultaneous use of [physical and virtual elements] was useful for learning
Spa6	The placement of the [virtual elements] was useful for learning
Spa3	The spatial connection between [physical and virtual elements] was useful for learning
Con3	The [virtual elements] were connected to [physical objects] at the appropriate time
Int5	When interacting with the [physical object], I received useful feedback from [virtual elements]