Reimagining Architectural Education

Leveraging H5P for enhanced engagement and lifelong learning

Silvia Albano [1], Guang Yang [1], Wenruo Xu [1], Wan Meng [1], Na Li [1]

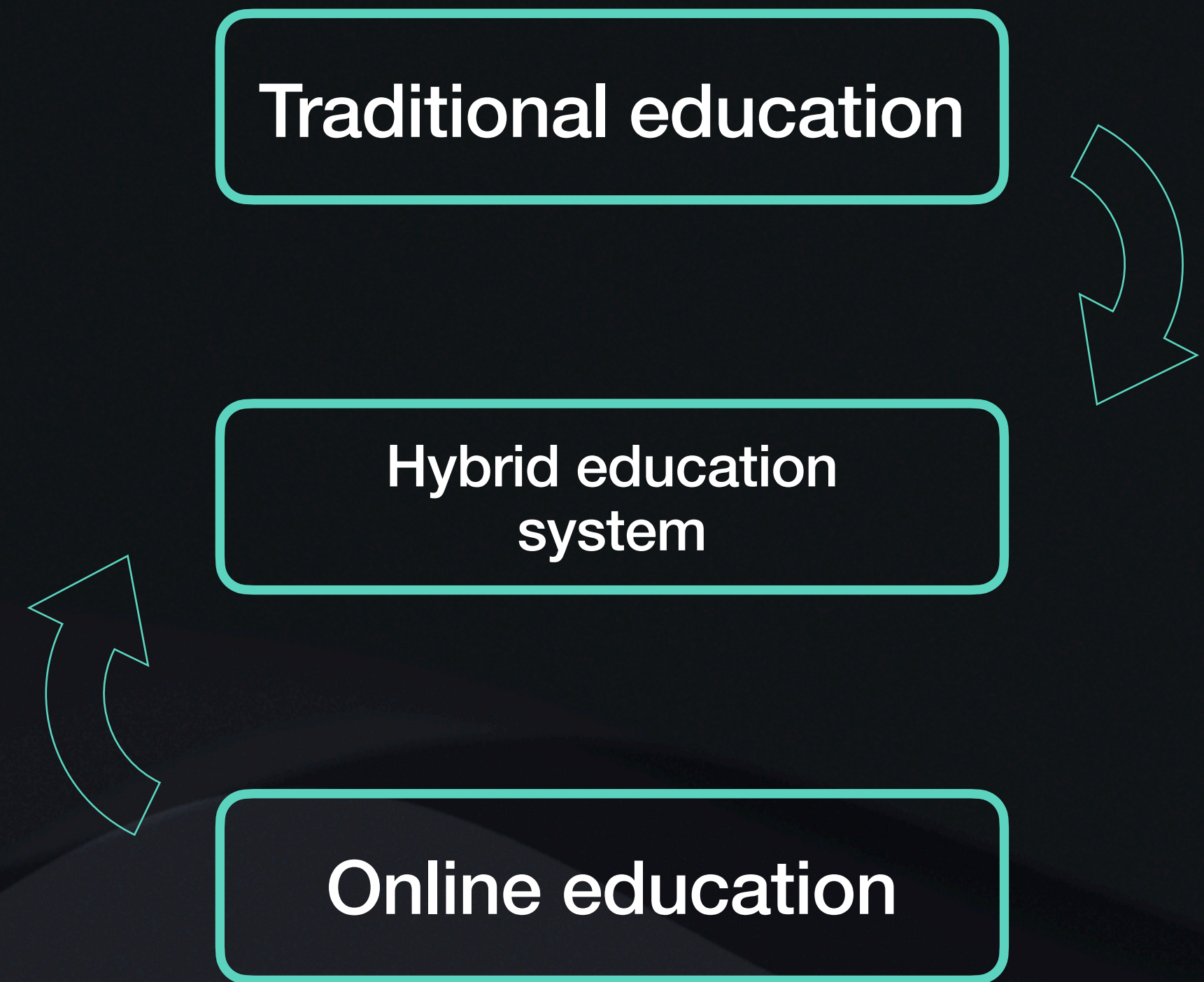Xi'an Jiaotong-Liverpool University
西交利物浦大学

T2_ Education in digital and hybrid context

Architectural Education

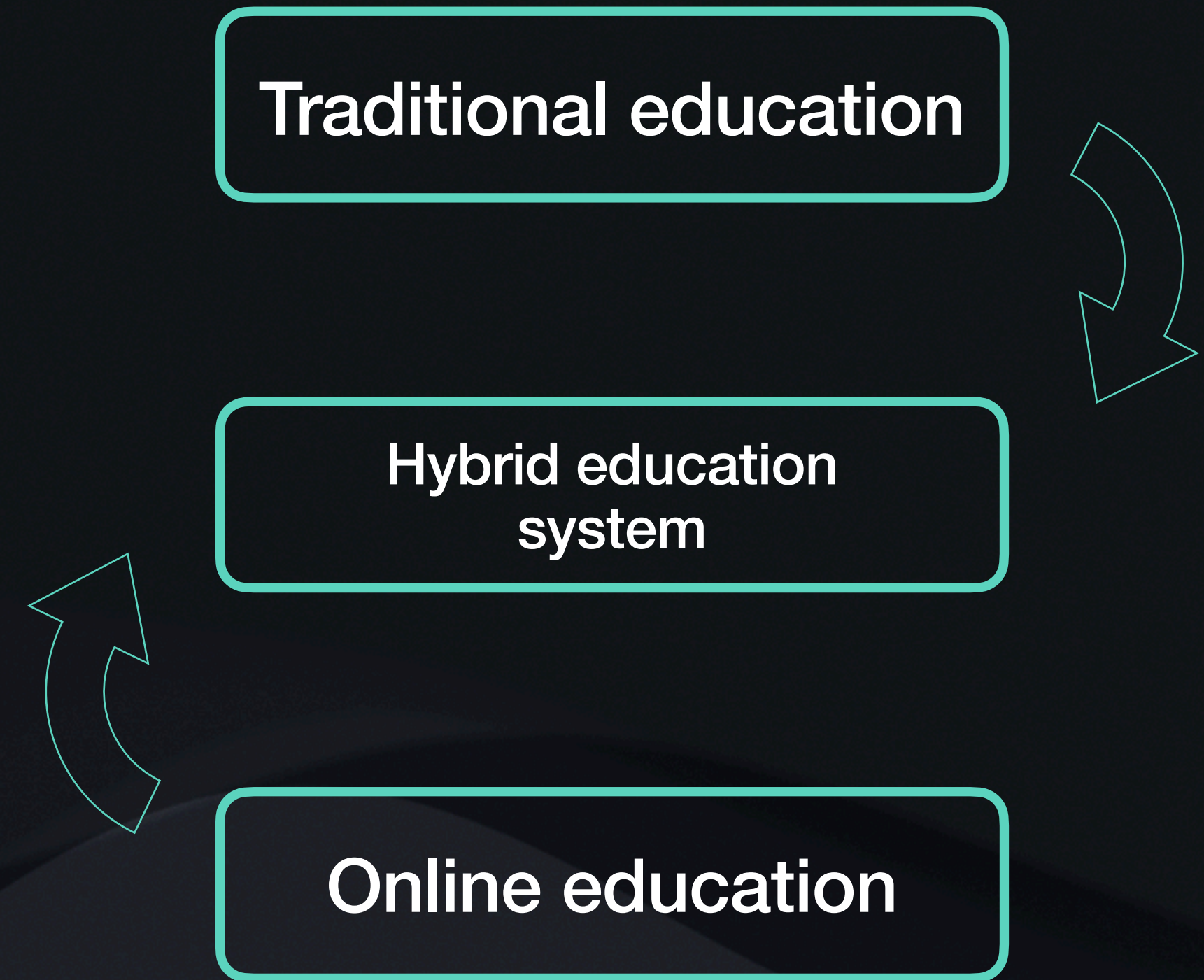## Shift to Digital and Online Learning

- **Impact of Global Events**: The COVID-19 pandemic accelerated the shift towards online architectural education, requiring new adaptations in hands-on learning.
- **Challenges in Engagement**: Online platforms face challenges maintaining student engagement, particularly in hands-on fields like architecture.

Traditional education

Hybrid education system

Online education

Reference: Jacob, T., & Centofanti, S. (2023). Effectiveness of H5P in Improving Student Learning Outcomes in an Online Tertiary Education Setting. Journal of Digital Learning in Teacher Education, 36, 469–485.

Architectural Education

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▼

As a Solution: H5P provides interactive and multimedia content, bridging gaps in engagement and enhancing learning experiences.
https://h5p.org/moodle

Traditional education

Hybrid education system

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RESEARCH GENERATIVE CONTEXT

Reference: Jacob, T., & Centofanti, S. (2023). Effectiveness of H5P in Improving Student Learning Outcomes in an Online Tertiary Education Setting. Journal of Digital Learning in Teacher Education, 36, 469–485.
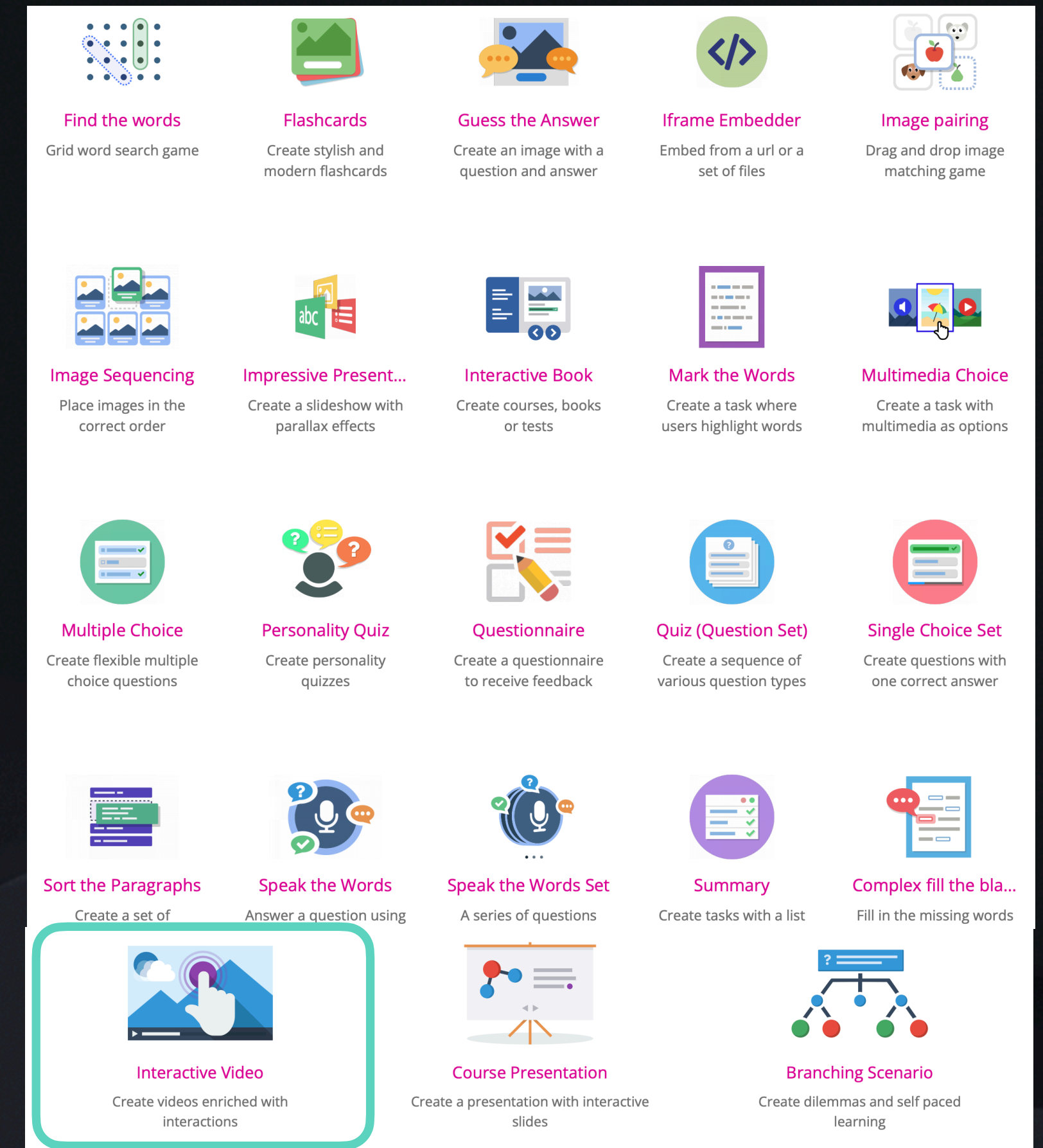
Architecture Education and H5P

Interactive Learning and Engagement

ARC CONTEXT

H5P NATURE

- **Multidisciplinary Learning**: Architecture education combines design, technical skills, and digital tools, benefiting from interactive teaching methods.

- **H5P Features**: Interactive videos and quizzes, video hotspots, and games like "escape rooms" align with the engaging needs of architecture education.

Reference: Blashki, K., Nichol, S., Jia, D., & Prompramote, S. (2007). The Future is Old: Immersive Learning with Generation Y Engineering Students. European Journal of Engineering Education, 32(4), 409-420.
https://h5p.org/content-types-and-applications

Architecture Education and H5P

Interactive Learning and Engagement

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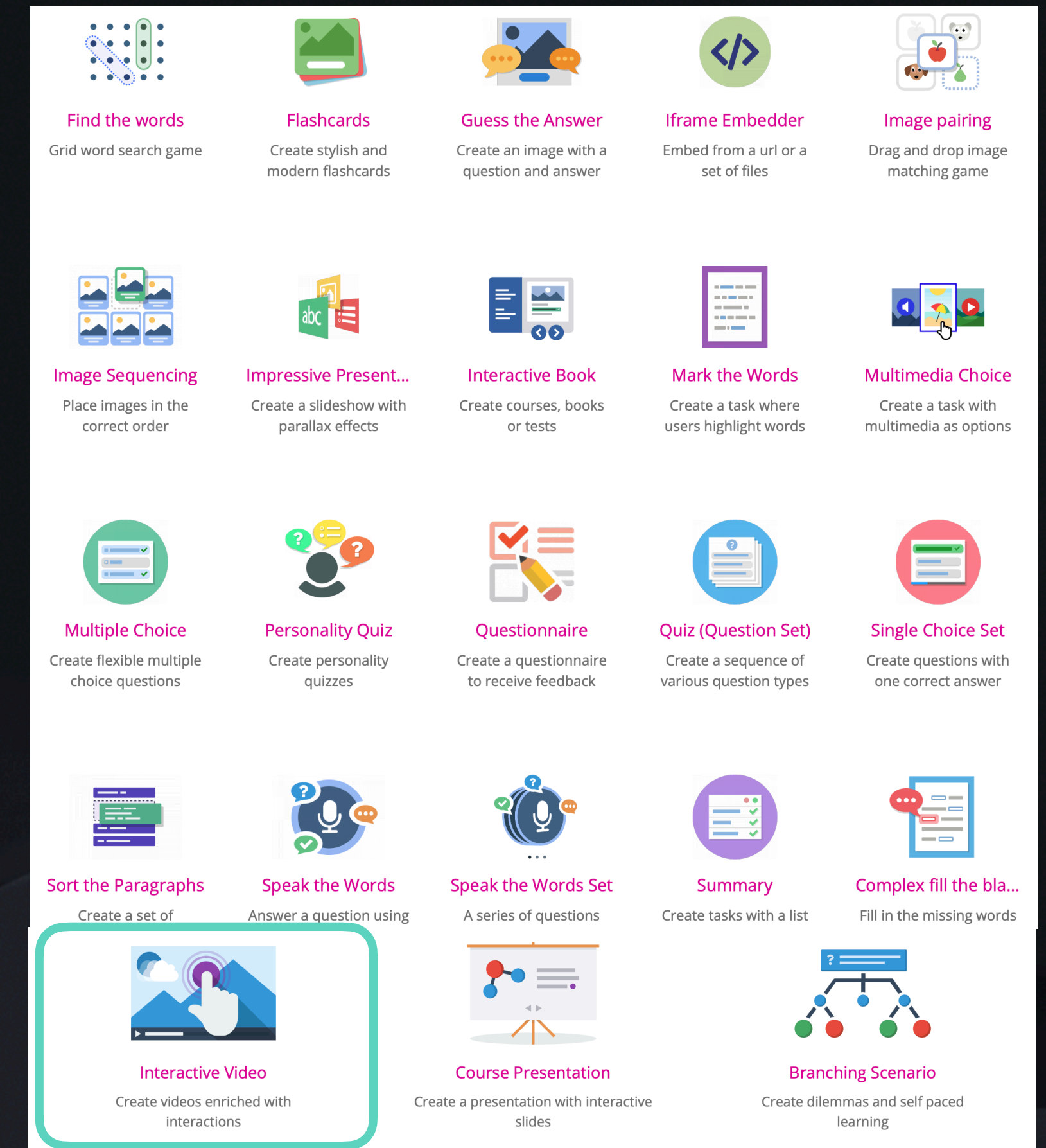
- **H5P Features**: Interactive videos and quizzes, video hotspots, and games like "escape rooms" align with the engaging needs of architecture education.

Supporting Critical Skills: H5P fosters creativity, problem-solving, and hands-on skills essential for modern architecture students.

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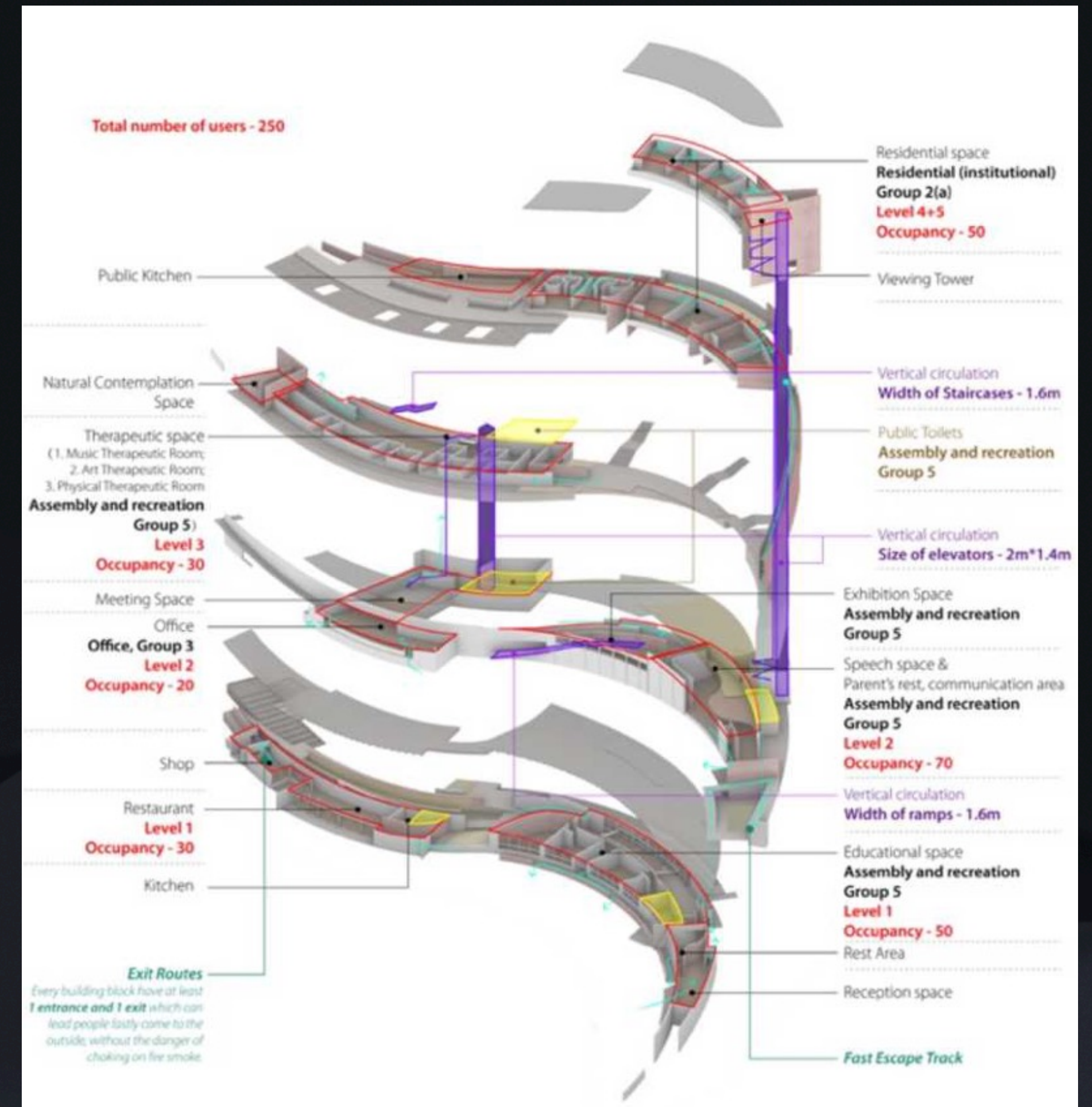https://h5p.org/content-types-and-applications

Lifelong Learning in Architecture

Continuous Skill Development

- **Definition and Importance**: Lifelong learning is essential in architecture for ongoing professional competence and adaptation to new technologies.
- **Self-Paced Learning with H5P**: H5P enables students to engage in learning beyond the classroom, fostering self-driven, continuous learning habits.
- **Adapting to Industry Changes**: With the rapid evolution in design and construction technologies, architects benefit from lifelong learning tools to stay updated.
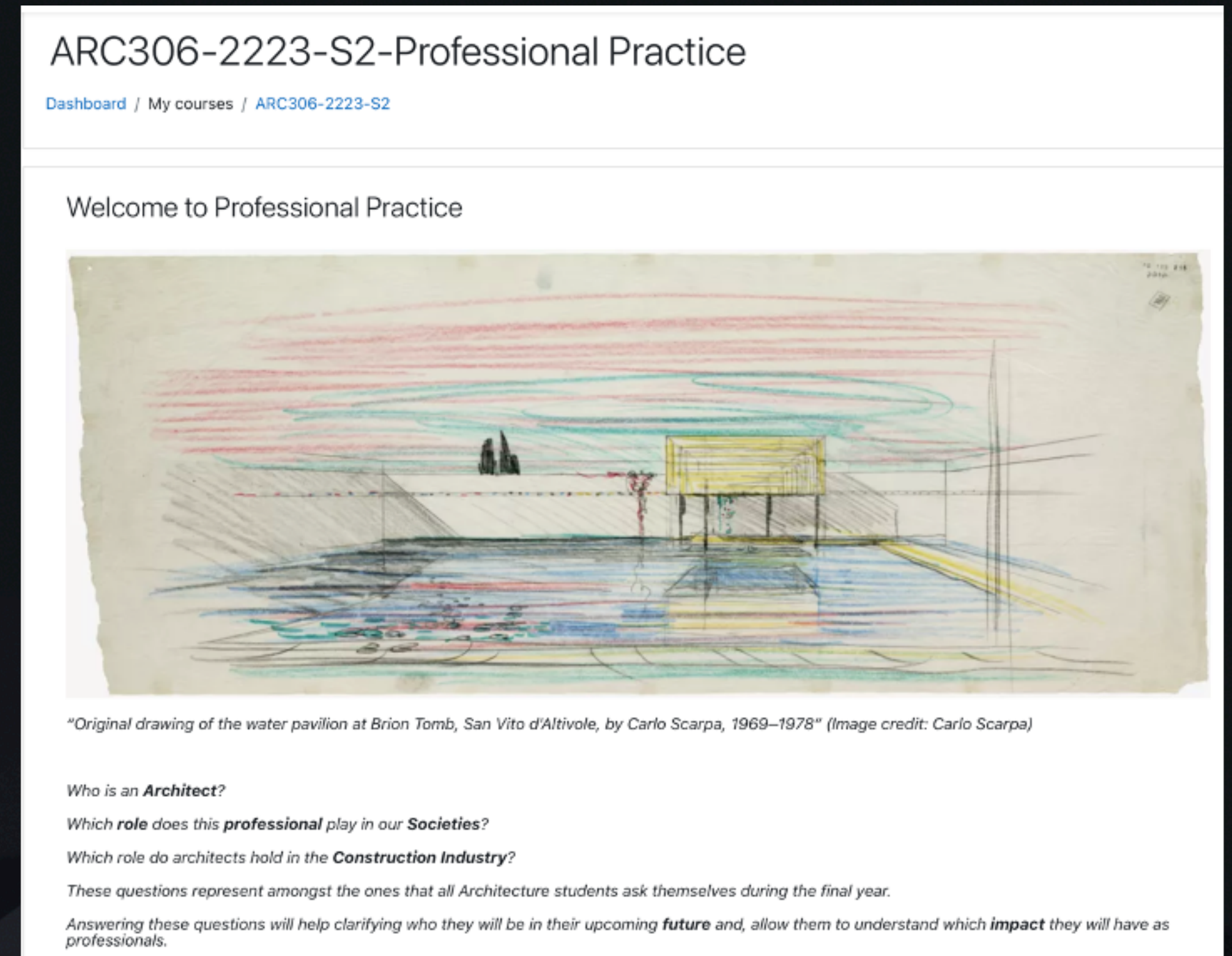
Training of next generation of professionals.

Reference: Thwe, T. M., & Kálmán, B. (2023). Lifelong Learning in a Knowledge-Based Society. Journal of Adult Education, 52(4), 567-582.
Outcome of the final assignment of the module designed by Wenruo Xu - Postgraduate student, based on the knowledge acquired in the module.

Methodology

Context, Data Collection and Analysis

- **Study Context**: Conducted in a senior undergraduate module in architecture, with voluntary student participation.

- **UTAUT-Based Questionnaire**: Assessed factors influencing H5P adoption, including 21 items measuring Technology Adoption and Learning Engagement.

- **Data Analysis**: Utilized **Spearman Correlation** to evaluate relationships between UTAUT constructs and behavioral intention.

ARC306-2223-S2-Professional Practice

Dashboard / My courses / ARC306-2223-S2

Welcome to Professional Practice

"Original drawing of the water pavilion at Brion Tomb, San Vito d'Altivole, by Carlo Scarpa, 1969–1978" (Image credit: Carlo Scarpa)

Who is an **Architect**?

Which **role** does this **professional** play in our **Societies**?

Which role do architects hold in the **Construction Industry**?

These questions represent amongst the ones that all Architecture students ask themselves during the final year.

Answering these questions will help clarifying who they will be in their upcoming **future** and, allow them to understand which **impact** they will have as professionals.

- 5- credits Lecture-based module
- Stage 4/Level 3
- 121 students - 13 participants

Reference: Williams, M. D., Rana, N. P., & Dwivedi, Y. K. (2015). The Unified Theory of Acceptance and Use of Technology (UTAUT): A Literature Review. Journal of Enterprise Information Management, 28(3), 443-488.
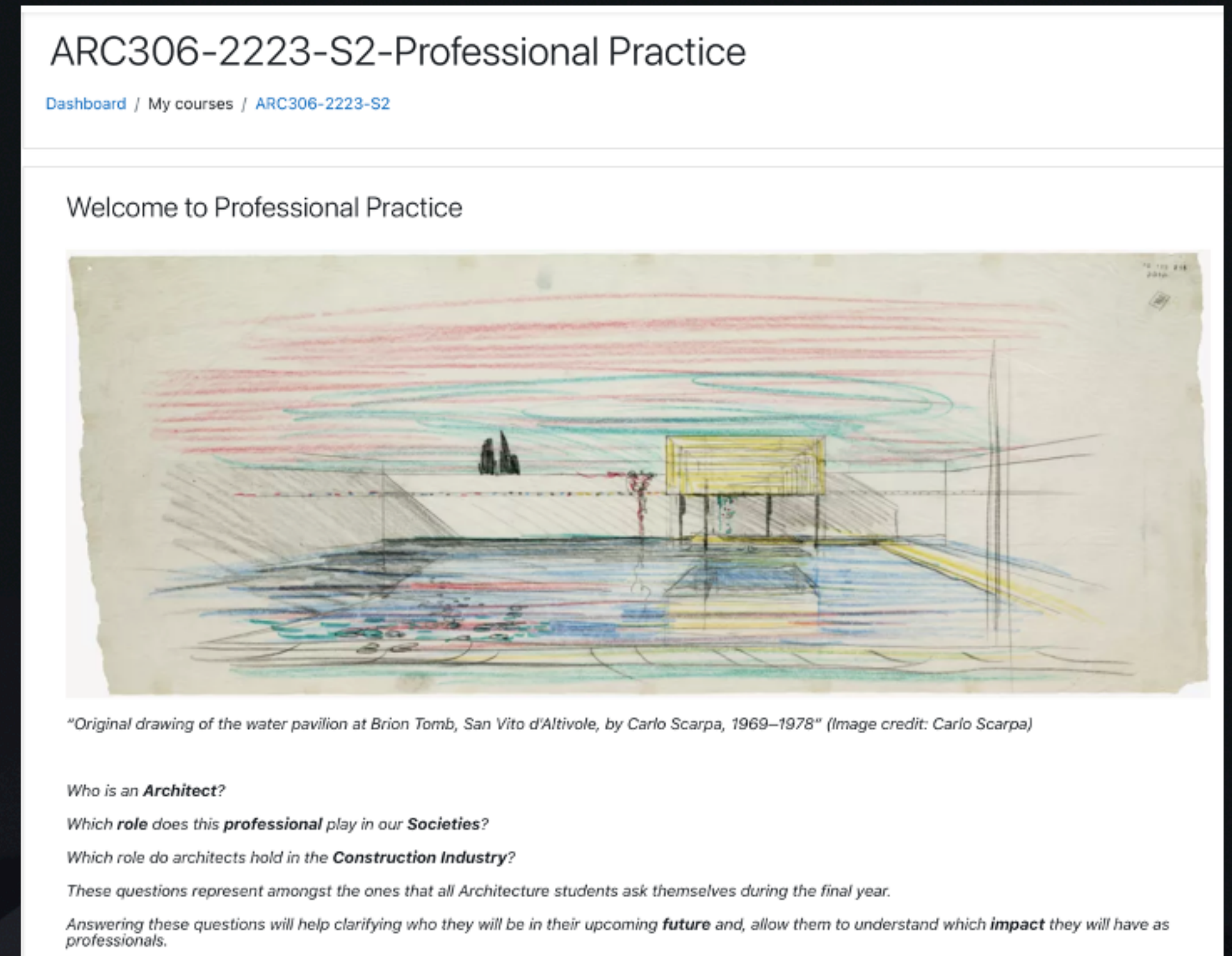Credits: XJTLU – Core – ARC306 Professional practice page - ay 22-23

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Research questions

1. What factors influence student's intention to use H5P?

2. How do the features of H5P contribute to students' behavior
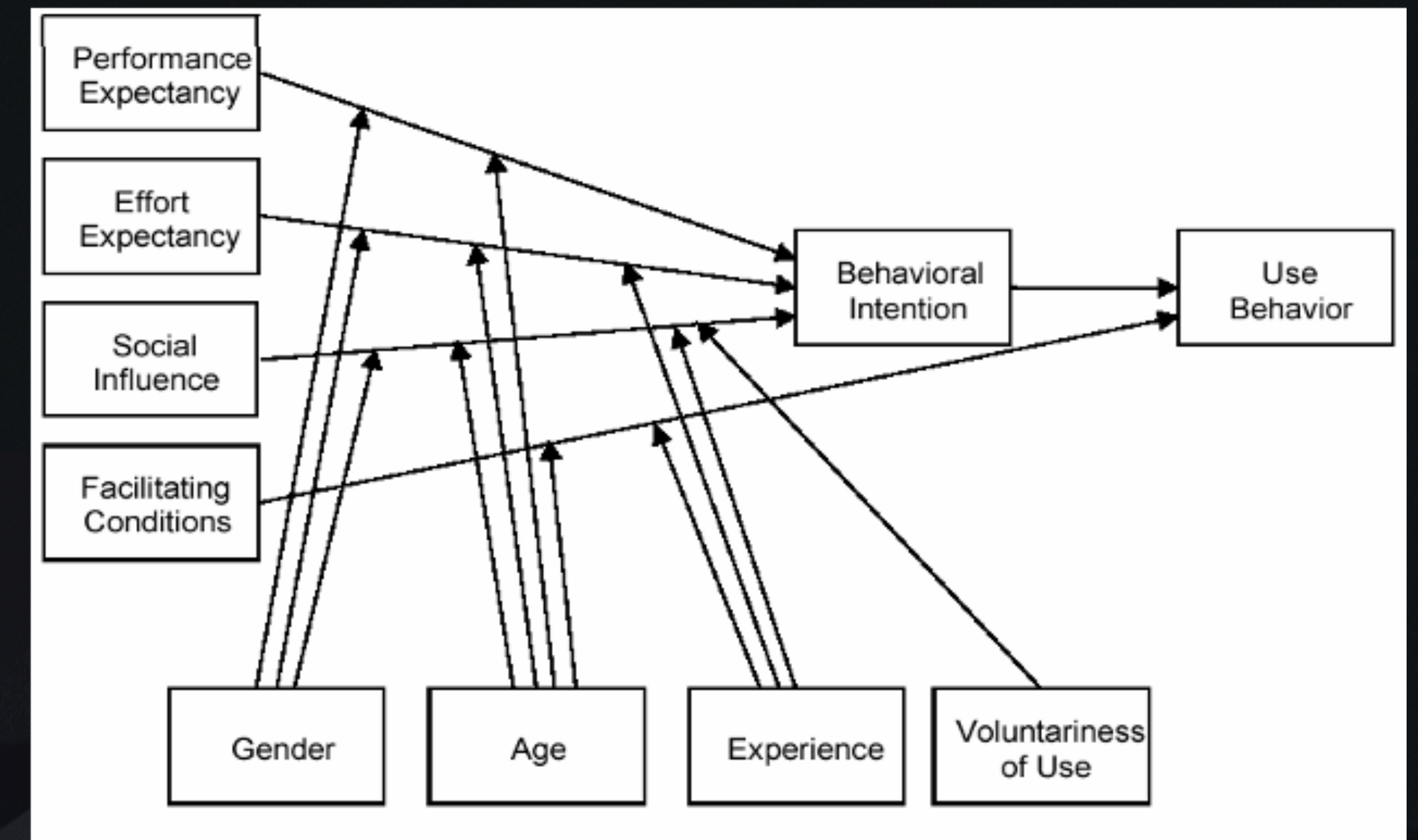   ○ engagement for learning?

ARC306-2223-S2-Professional Practice

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UTAUT Model for Technology Adoption

Understanding H5P's Role in Learning

To better understand the role and possible potentials of H5P in architecture education has been used the Unified Theory of Acceptance and Use of Technology (UTAUT) model introduced in 2003 by Vendkatesh et all.

o

Reference: Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). *User Acceptance of Information Technology: Toward a Unified View*. MIS Quarterly, 27(3), 425-478.
- The Unified Theory of Acceptance and Use of Technology (UTAUT), Vendkatesh et all, 2003.

UTAUT Model for Technology Adoption

Applying the UTAUT Model in Architectural Education

Overview of UTAUT Constructs:

Performance Expectancy (PE): Belief that H5P enhances learning and engagement.

Effort Expectancy (EE): Perceived ease of use for H5P.

Social Influence (SI): Influence from peers and instructors on H5P adoption.

Facilitating Conditions (FC): Availability of resources to support H5P use.
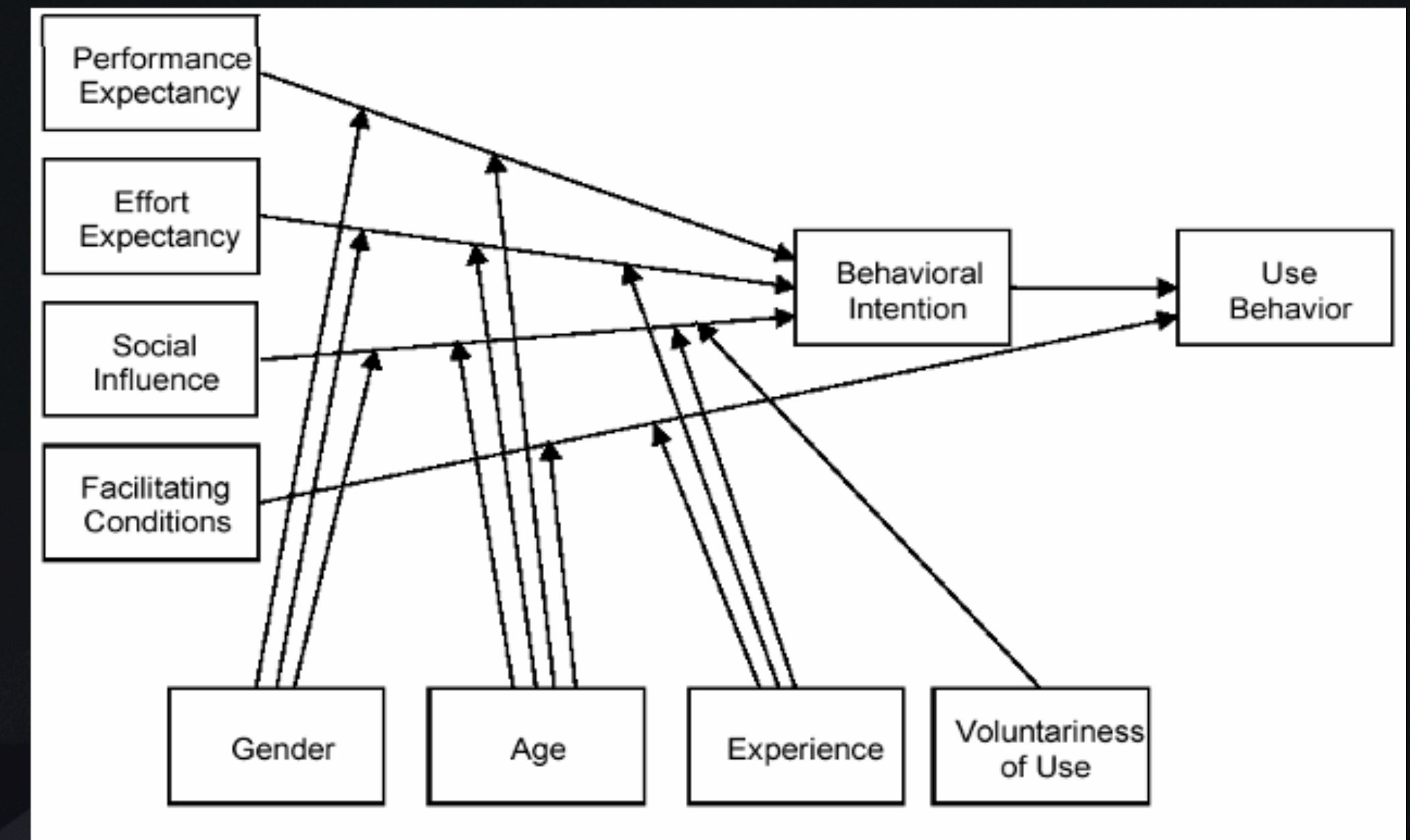
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UTAUT Model for Technology Adoption

Data Collection

Questionnaire: Used a Likert scale (1-5) to measure agreement with statements regarding each UTAUT construct.

Sample Size: 13 architecture students.

Data Analysis

Spearman Correlation: Measures association between constructs (e.g., PE, EE, SI, FC) and Behavioral Intention (BI).

Significance Levels: Statistical significance set at **$p < 0.05$** for SI, **$p < 0.01$** for PE.

Construct	Correlation Coefficient (ρ)	Significance (p-value)
Performance Expectancy (PE)	0.744	0.004 (significant)
Effort Expectancy (EE)	0.166	0.587 (not significant)
Social Influence (SI)	0.569	0.043 (significant)
Facilitating Conditions (FC)	-0.097	0.752 (not significant)

Reference: Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). *User Acceptance of Information Technology: Toward a Unified View*. MIS Quarterly, 27(3), 425-478.
Data Table extracted from the paper, Reimagining Architectural Education: Leveraging h5p for enhanced engagement and lifelong learning
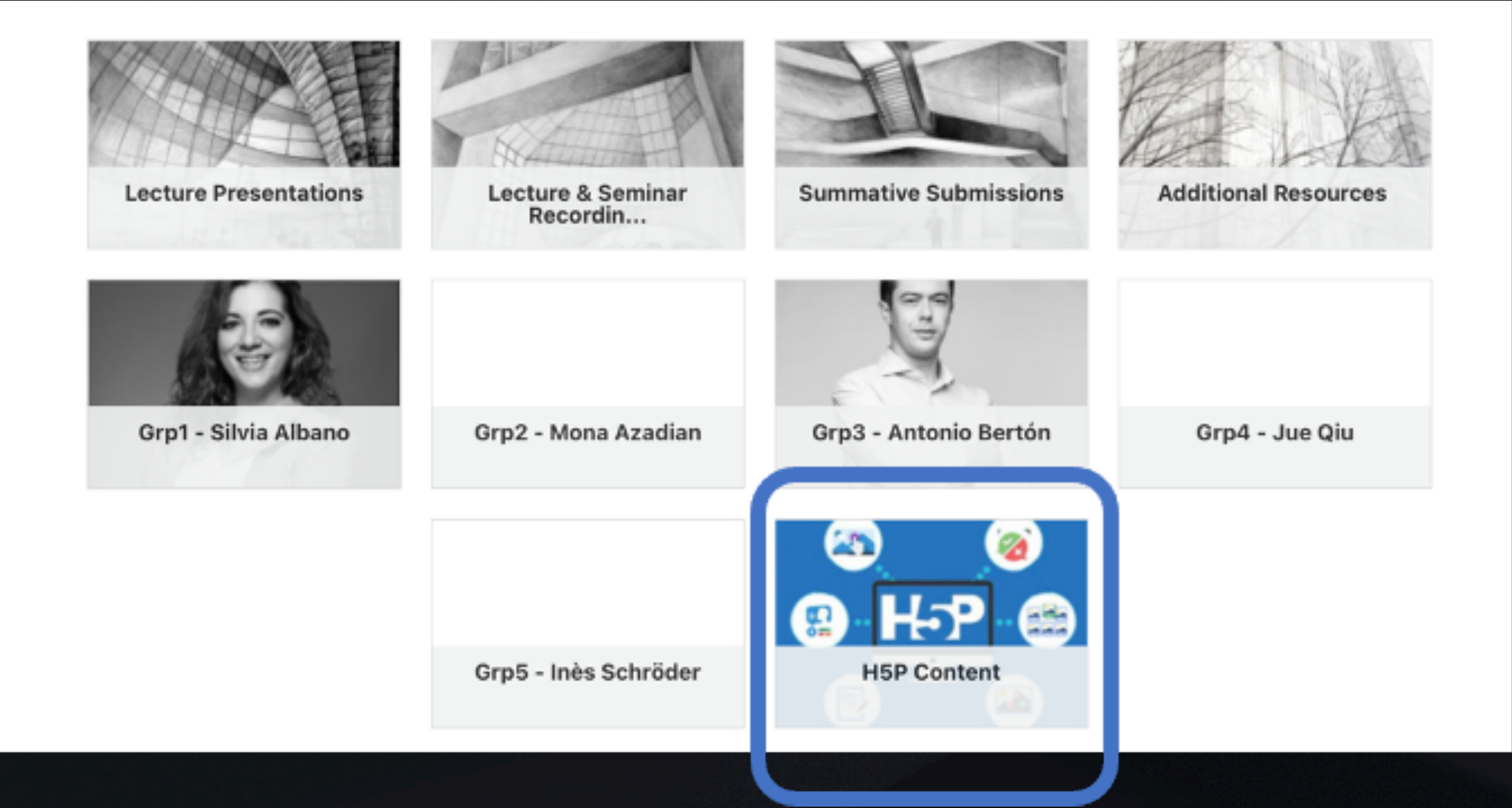
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UTAUT Model for Technology Adoption

Understanding H5P's Role in Learning_Results

Using the UTAUT model allowed the study to analyze which factors most influence students' adoption of H5P. The table shows that **Performance Expectancy** and **Social Influence** have the highest correlations with students' Behavioral Intention (BI) to use H5P. This indicates that students find H5P beneficial for learning and are influenced by the support they receive from peers and instructors, while **Effort Expectancy** and **Facilitating Conditions** showed no significant impact, likely due to students' familiarity with digital tools.

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Data Table extracted from the paper, Reimagining Architectural Education: Leveraging h5p for enhanced engagement and lifelong learning

Key Results

Impact of H5P on Student Engagement

- **Quantitative Findings**: Performance Expectancy and Social Influence had significant correlations with Behavioral Intention to use H5P.

- **Qualitative Insights**: Students valued interactive features, timely feedback, and multimedia, which enhanced learning experiences.

- **Engagement Levels**: Over 60% of students rated their engagement with H5P highly, though some cited the need for more support.

Reference: Albano, S., Xu, W., & Li, N. (2023). Challenges and Opportunities in Using Digital Pedagogy for Game-Based Architecture Education: A Case in China. In Creativity in the Age of Digital Reproduction (pp. 95-102). Springer Singapore.

Application

Short demo

Application

Short demo

Health&Safety

**Inclusion&
Accessibility**

Sustainability

Escape room n.1

Escape room n.2

Escape room n.3

Application

Short demo

Welcome to join the first digital escape room supported by the H5P technology!

Please watch the video and answer the interactive questions. After you get all the correct answers, you will see a **"Room 2 Password"** hotspot at the end, click on it and you can find the password to unlock Room 2.

Below the interactive video are instructions for password input.
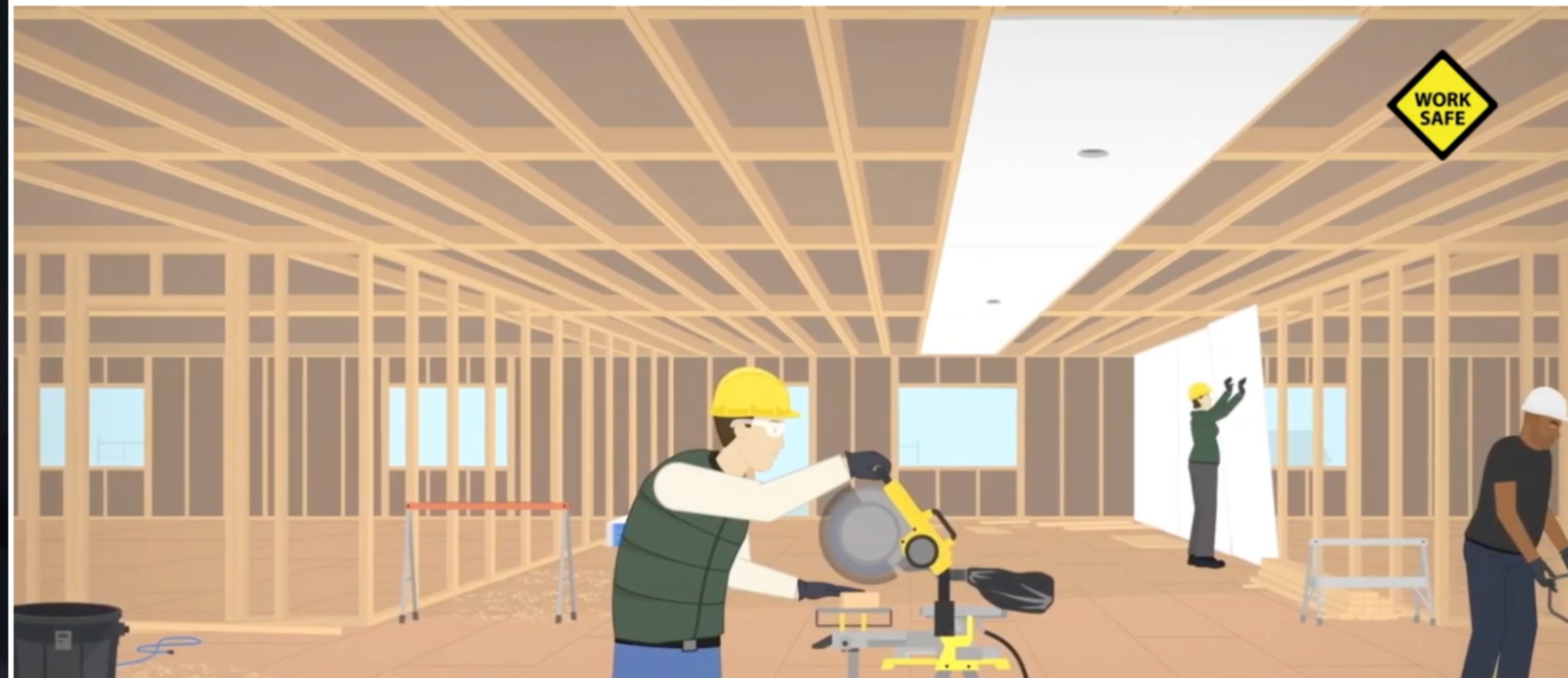
Health&Safety - Escape room n.1

Application

Short demo

Sequence scheme – a sample

1. Who are the people involved? Please select the option you think is the most correct based on the lecture "Health and Safety".

The client – the client advisors – the lead designer – the construction advisors – the BIM consultant – the acustic consultant

The contractor – the workers – the cost consultant - the technologist – the assistant architect – Designers

The client – the contractor - the workers – Engineers - the construction advisors – the façade engineer - the BIM consultant

The client – the contractor – the workers – the senior site manager – Architects&Engineers – Safety supervisors

2. Which is the statistic order of accident during a work-site? Please select the option you think is the most correct one considering at first the hazard most common and then proceeding until the rarest.

incorrect use of working tools – demolishing activities + excavation stability – no use of IPG (individual protection gadgets) – vertical falls – dangerous materials

no use of IPG (individual protection gadgets) - demolishing activities + excavation stability - incorrect use of working tools - dangerous materials - vertical fall

dangerous materials - vertical falls – no use of IPG (individual protection gadgets) - demolishing activities + excavation stability - incorrect use of working tools

vertical falls – incorrect use of working tools – demolishing activities + excavation stability - no use of IPG (individual protection gadgets) - dangerous material

Health&Safety - Escape room n.1

4. Who is the main person in charge for monitoring, informing and training any possible workers in the work-site? Please select the option you think is the most correct one based on the lecture "Health and Safety".

the Architect

the Senior Site Manager

the Safety professionals and supervisors

the contractor

3. Who is the main person in charge for monitoring, preventing and mitigating any possible hazard in the work-site ? Please select the option you think is the most correct one based on the lecture "Health and Safety".

the Senior Site Manager

the Architect

the Safety professionals and supervisors

the Contractor

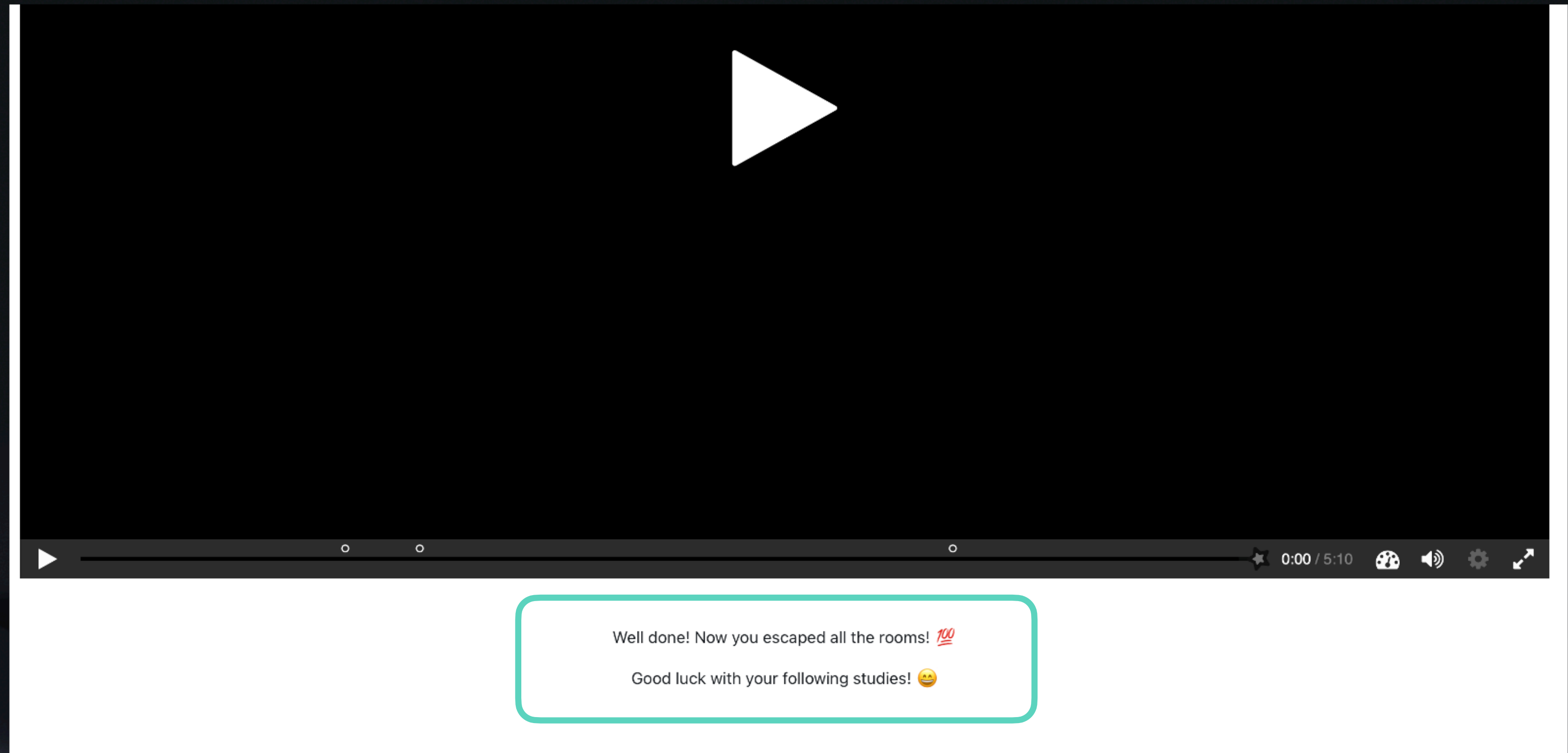5. Based on the lecture "Health and Safety" please select the option you think describe better the site-layout.

Plan emergency routes and exits, traffic routes, danger areas, loading bays, ramps, locker room area, temporary office, crane allocation, electrical panel, scaffolding, entrance gate cars/pedestrian

Crane allocation, scaffolding, locker room area, temporary office, electrical panel, entrance gate cars/pedestrian

Plan emergency routes and exits, traffic routes, temporary office, crane allocation, laboratories

Scaffolding, office, crane allocation, plan emergency routes and exits, entrance gate cars/pedestrian

Room 2 Password

Remember your password!

Password: **accessibility**

Application

## Short demo

Conclusion

Sustainability - Escape room n.3

Features of H5P Enhancing Engagement

Elements Contributing to Learning Success

- **Timely Feedback**: Real-time feedback on tasks allows students to adjust learning strategies immediately.
- **Fun and Interactive Elements**: Game-like activities make learning enjoyable and engaging, promoting positive attitudes.
- **Multimedia Integration**: Combining visuals and audio improves comprehension of complex architectural concepts.
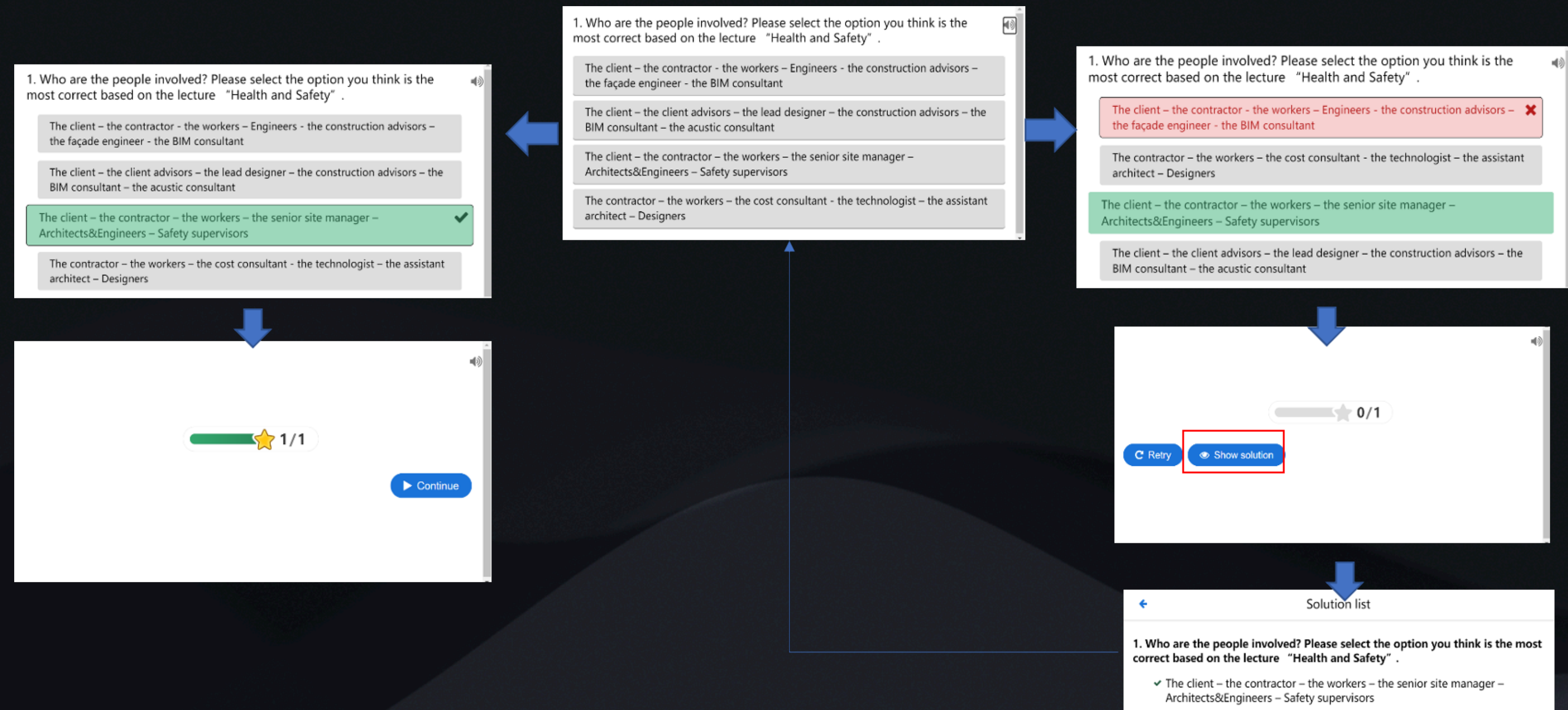
Conclusion and Future Directions

Advancing Architectural Education with H5P

- **Summary of Findings**: H5P enhances engagement and learning outcomes, especially in interactive and multimedia-rich courses.
- **Future Research**: Exploring advanced features such as virtual tours and branching scenarios to broaden H5P's application.
- **Integration of Lifelong Learning**: Encouraging continuous skill development to keep pace with industry innovations and changes.

Design School / Department of Architecture
ARC306-2324-S2-Professional Practice

Course   Settings   Participants   Grades   Reports   More ⌄

Warning: Course has 1 orphaned section(s) with content.

⌄ **Welcome!**   Collapse all

As an architect you design for the present with an awareness of the past for a future which is essentially unknown.

Norman Foster
blog.miragestudio7.com

*Who is an **Architect**?*

*Which **role** does this **professional** play in our **Societies**?*

*Which role do architects hold in the **Construction Industry**?*

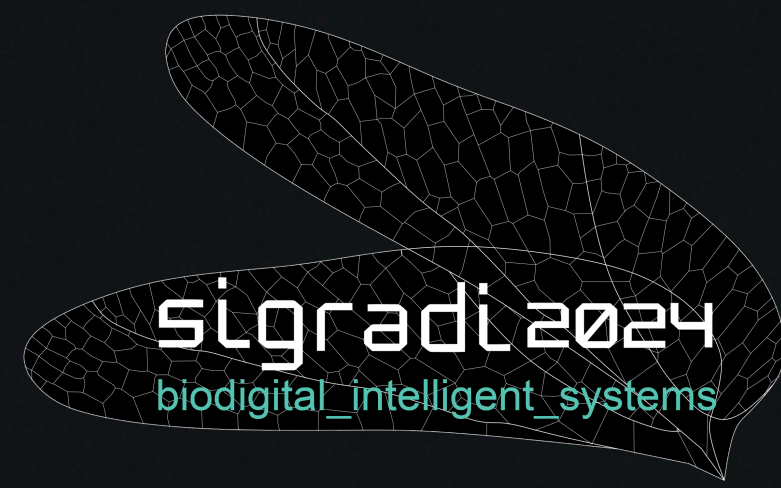**Digital-game based learning activities**

Digital activity1_Week1

Digital activity2_Week1

Digital activity3_Week1

Digital activity4_Week2

Digital activity5_Week2

Digital activity_Week6

Reference: Dabbagh, N., & Castaneda, L. (2020). *The Role of Technology in Lifelong Learning.* Journal of Educational Technology Systems, 48(1), 10-25.
Credits XJTLU – Core – ARC306 Professional practice page - ay 22-23

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