The Use of Virtual Reality (VR) by Future Teachers at Kuwait University

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Abstract

Virtual reality (VR) creates immersive environments but remains underused in students training at Kuwait University. A survey collected responses from 1,380 preservice teachers across the sciences, mathematics, language arts, and social studies. The questionnaire inquired about age at first VR use, methods of learning about VR, reasons for use, skill level, social setting, and the first emotional response. Results show that most students first heard about VR from friends or classmates (51%) or online videos (26%). Only 10% of students were introduced to VR in their courses. The first use occurred between the ages of 16 and 20 for 24% of participants, and 21% began using VR within the past one to five years. Twelve percent had never tried VR. Entertainment led motivations (34%), followed by fun (14%), simulations or automation (13%), and exploratory learning (11%). Skill levels were low for nearly half of the students (49%), while high skill was reported by 18%. Most students (52%) used VR with their peers, and 75% reported feeling no anxiety during their first use. These findings point to a recreational focus and low confidence in VR among future teachers. To support the use of VR in teaching, four steps are suggested. First, add hands-on VR workshops in teaching methods courses to build skills. Second, encourage group VR projects to foster collaboration. Third, incorporate VR tasks into regular lessons to bridge the gap between theory and practice. Fourth, establish support systems, such as peer mentors, online resource centers, and training tutorials. These steps can boost confidence, increase interest, and help turn VR from a leisure activity into a useful instructional tool.

Keywords: virtual reality, preservice teachers, teacher training, technology integration, Kuwait University, immersive learning

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Introduction

Virtual reality (VR) creates a computer-generated, three-dimensional world. Headsets and motion controllers allow movement and interaction with virtual objects. Past applications centered on gaming. The growth of affordable hardware and software has opened new opportunities in professional training, medical simulations, and education. In teacher preparation programs, VR can simulate a classroom of virtual students exhibiting behaviors such as distraction or collaboration. Such practice offers a risk-free opportunity for rehearsal of lesson delivery, management strategies, and engagement techniques. At Kuwait University's College of Education, courses cover learning theories, digital tools, and classroom practicum in local schools. Instruction on general educational technology appears in multiple courses. Instruction specific to VR remains minimal. There is no formal module or lab session that focuses on VR tools and techniques. Absence of data on student awareness channels, first-use timing, motivations, skill levels, and social patterns creates uncertainty for curriculum planning. To address this gap, this study uses a descriptive-analytical survey of 1,015 students in the College of Education at Kuwait University. The work aims to understand both broad factors and specific patterns of VR use among future teachers. This leads to two research questions:

- Main research question: What are the key factors that shape preservice teachers' adoption and use of VR tools at Kuwait University?
- Sub research question: How do future teachers' patterns of VR use relate to their self-rated proficiency and their social context?

In line with these questions, the study sets four objectives. First, it will identify the main sources through which future teachers learn about VR, such as friends, online tutorials, or the curriculum. Second, it will document when students first started using VR tools. Third, it will examine the primary reasons for using VR, including entertainment, education, and professional practice. Fourth, it will measure self-reported proficiency levels using VR tools ranging from no skill to high skill. These objectives guide the design of the survey and the presentation of the results.

Literature Review

In the last five years, universities worldwide have experimented with VR in education. For example, Google Expeditions, launched in 2016, offered more than 900 virtual trips to destinations such as the Great Barrier Reef and Mars (Parmaxi et al., 2021). Teacher trainees in some US colleges used these trips to develop lesson plans in geography and science. They reported more excitement in class when they used VR materials. In Asia, Singapore's Ministry of Education operates VR labs, such as the one at the University of Istanbul (IUVIRLAB), which facilitates the learning process through a three-dimensional learning strategy in a physics laboratory (Naranjo et al., 2020). Trainees utilize VR to practice classroom management in a simulated school environment (Zhang, 2025). A study found that these trainees rated their classroom as highly ready as when participating in VR sessions (Huang et al., 2021). Currently, China is in the process of integrating, artificial intelligence, Internet of Things, VR, and augmented reality into educational systems, so to improve learning experiences through interactive and personalized environments (Zhang, 2025). According to Bermejo et al. (2023), Spain, China, Australia, the UK and Germany are the countries with the highest application of AR/VR in enhancing teaching-learning experiences with Spain having the highest count on subjects taught through AR/VR. A lack of practical guidance and missing links to lesson objectives limited the transformative use. Higher education teaching staff adopt VR in various

ways, ranging from face-to-face to non-assessable tasks, and blended-mode subjects, where participants attain a higher level of self-efficacy in student-teaching placements.

Preservice teacher research shows a confidence gap with new technologies. In the Middle East, the UAE and Saudi Arabia are investing in VR for medical training; however, there is less documented work in the area of teacher education. Kuwait's Vision 2035 includes plans to improve tech in classrooms, but progress is gradual (Aishah Alenezi, 2021). In Kuwait, various obstacles exist to integrating VR technologies in teaching, including the need for a VR lab, the availability of required VR devices and equipment, the development of VR technologies that support the Arabic language, and the establishment of technical teams to design and produce educational VR technologies (Almisad, 2024). That hinders the adoption of VR by future educators. In universities, pilot projects exist, but they often depend on individual lecturers rather than a formal program.

Theoretical Framework

These facts suggest that VR is an attractive option for teacher training, but it requires clear support. Informal use, like students trying VR at home or with friends, is common, but formal curriculum integration is rare. The mixed skill levels among users necessitate that training begin with the basics. Understanding how future teachers at Kuwait University currently perceive and utilize VR can inform strategies to bridge the gap between leisure and learning. In science teaching, virtual laboratories permit safe experimentation with virtual chemicals and equipment. Students perform laboratory procedures safely, minimizing the risk of spills and injury. In history courses, virtual tours of ancient ruins allow for the exploration of inaccessible sites. Reports indicate increased student motivation and higher retention of historical facts. Language learning studies used VR scenarios to simulate real-life conversations. For example, virtual marketplaces and travel settings improved pronunciation and listening comprehension. Quantitative results showed improvements in scores on oral proficiency tests following VR interventions. Therefore, constructivist learning theory underlies many VR implementations (Marougkas et al., 2023). Learning by doing and knowledge construction through exploration align with VR experiences. Experiential learning theory also applies; concrete experience in VR, reflective observation, abstract conceptualization, and active experimentation form a cycle that supports deep learning.

Methods

The study employed a descriptive-analytical survey design to capture current practices and perceptions. The population included all students enrolled in the College of Education at Kuwait University during the spring semester. A simple random sample of 1,015 preservice teachers was drawn from the university registry. This sample included future teachers in science, mathematics, language, and social studies education, ensuring representation of elementary and secondary teaching tracks. Data collection was done through an online questionnaire. The questionnaire included six sections aligned with the study objectives:

Demographic Information

- Age groups: under 20, 20–24, 25–29, 30 and above
- Major area: science education, mathematics education, language education, social studies education
- Year of study: first year, second year, third year, fourth year, and above

Sources of VR Awareness

- Options: friends or colleagues, online videos/tutorials, websites/forums, formal coursework, media advertisements, family discussions, books

Timing of First VR Use

- Options: never used VR, more than 20 years ago, 11–15 years ago, 6–10 years ago, 1–5 years ago, between the ages of 16 and 20

Motivations for VR Use

- Options: entertainment (to kill free time), amusement/enjoyment, simulations and automation, exploration of new places, personality exploration, social VR environments, environmental interaction, other

Self-Rated VR Proficiency

- Options: none, low, medium, high

Social Context and Initial Reaction

- Use alone, with friends or colleagues, with family members, or with strangers

Emotional Reaction at First VR Use: Worried or Not Worried

A pilot test was conducted with 30 students not included in the main sample. Feedback on clarity and survey length led to slight wording edits. Reliability was tested via test-retest after one week, showing consistency above 0.85. Content validity was confirmed through expert review by two faculty members in the field of educational technology.

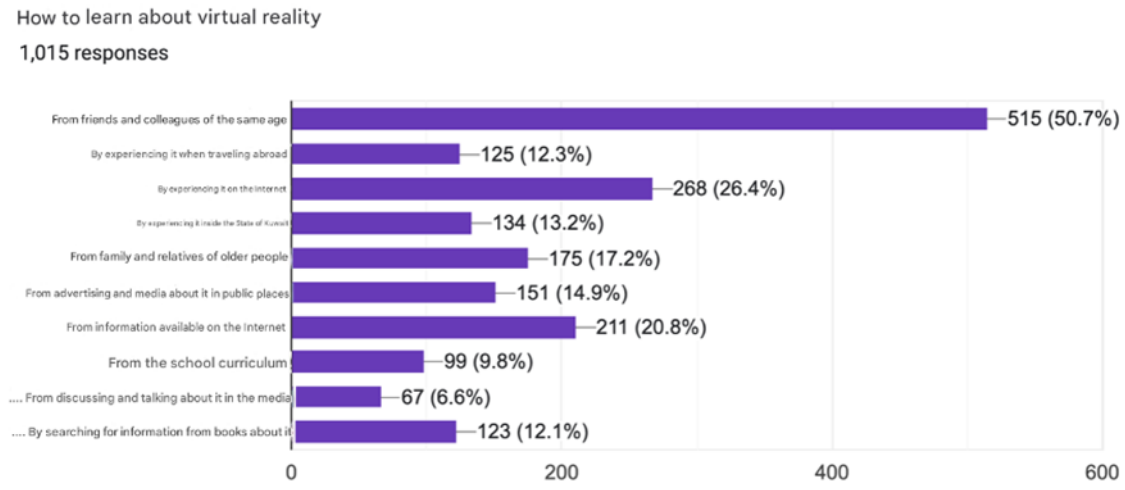
The final questionnaire was distributed via email. The survey remained open for two weeks. Reminder messages were sent at the end of week one and three days before closing. A total of 1,380 responses were received. Responses with more than two missing items were excluded, yielding 1,015 complete surveys. Data analysis involved descriptive statistics, including frequencies and percentages, for each item, calculated using standard statistical software. Results are presented in the next section without interpretation.

Results

Sources of Learning About VR

Half of the sample (50.7%) first learned about VR from friends or colleagues. Online videos and tutorials came next at 26.4%. About 20.8% cited websites or forums, while formal curriculum in class accounted for only 9.8%. Other sources, including family, media ads, and books, each fell below 15%. These figures indicate that informal peer and online channels are the primary sources of VR awareness among future teachers.

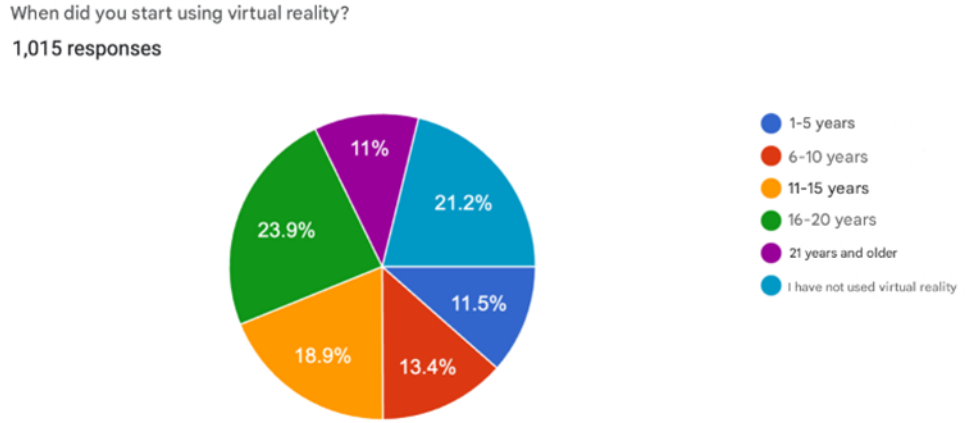
Figure 1
How to Learn About Virtual Reality?



Timing of First VR Use

When asked about the timing of first VR use, 23.9% reported starting between the ages of 16 and 20. A nearly equal share, 11.5%, began within the last 1–5 years. The next group, 18.9%, started 6–10 years ago. Fewer students began 11–15 years ago (13.4%) or more than 21 years ago (11%). Finally, 11.5% have never used VR. This spread indicates that most future teachers encountered VR in late adolescence or early adulthood.

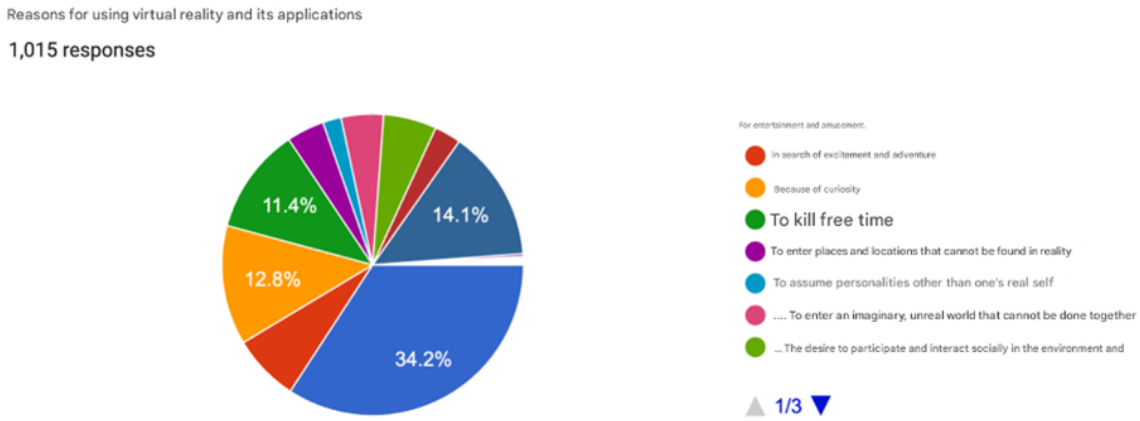
Figure 2
When Did You Start Using Virtual Reality?



Reasons for Using VR

The top reason for using VR was “to kill free time,” chosen by 34.2% of the students. “Amusement and enjoyment” followed at 14.1%, then “simulations and automation” at 12.8%. “Discovering places not found in reality” was next at 11.4%. Less common reasons, such as personality exploration, social VR spaces, and environmental interaction, each accounted for less than 10%. These data suggest that while entertainment is the main driver, a notable share of students use VR for learning and practice.

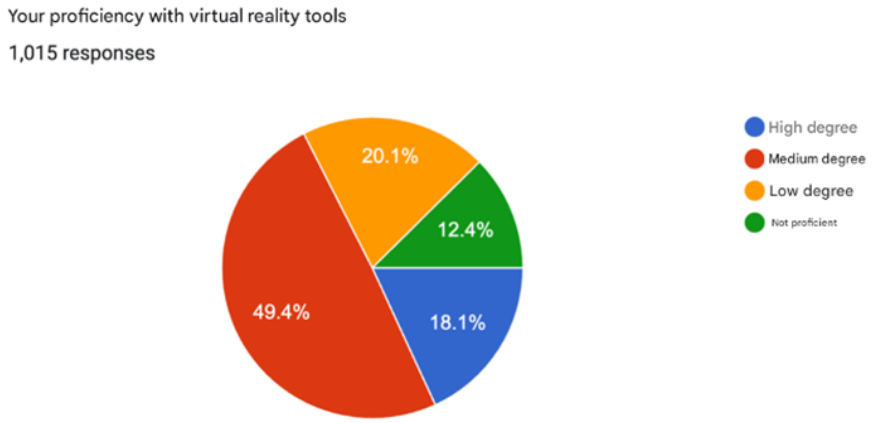
Figure 3
Reasons for Using Virtual Reality and Its Applications



Self-Rated VR Proficiency

When rating their own VR skills, 20.1% of students selected “low.” Only 18.1% reported having “high” proficiency. “Medium” proficiency was chosen by 49.4%, and 12.4% reported no proficiency at all. This shows that nearly half of preservice teachers lack confidence in using VR tools, even after initial exposure.

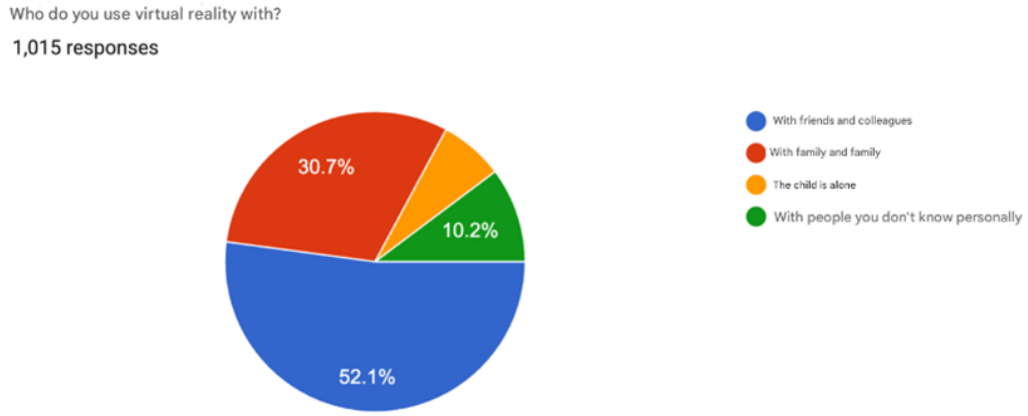
Figure 4
Your Proficiency With Virtual Reality Tools



Social Context of VR Use

Over half of students (52.1%) use VR with friends or colleagues. About 30.7% use it with family. Fewer students use VR alone (7%) while 10.2% use it with strangers. This pattern highlights the social, peer-based nature of VR use among future teachers.

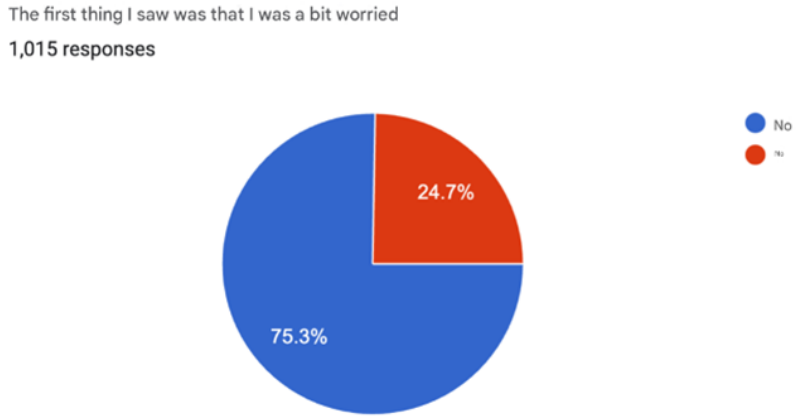
Figure 5
Who Do You Use Virtual Reality With?



Initial Worry About VR

Most students (75.3%) reported not feeling worried when they first tried VR. A smaller group (24.7%) reported some initial worry. This suggests a generally positive or curious attitude at first exposure, with a minority feeling anxiety.

Figure 6
The First Thing I Saw Was That I Was Worried



Discussion

The present study sheds light on key facets of VR adoption among preservice teachers at Kuwait University, revealing a predominantly recreational orientation, informal learning pathways, and limited self-perceived proficiency. Consistent with the Technology Acceptance Model, peer influence is identified as a critical driver of awareness, while perceived ease of use appears to be low, given the large proportion of participants rating their proficiency as low or nonexistent. The prominence of entertainment as a usage motive suggests that preservice teachers primarily engage with VR for leisure, rather than for pedagogical exploration. This finding aligns with Scurati et al.'s (2021) observation that, in the absence of structured educational frameworks, users tend to default to recreational VR experiences.

The social context data reinforce the communal nature of VR engagement: over half of the participants enjoy VR with friends and colleagues. Collaborative VR environments have

potential for group-based pedagogical activities, but the current recreational focus may limit the translation of VR skills into classroom practice. Moreover, while initial exposure rarely provokes anxiety for most, the quarter of students who experience worry signal the importance of scaffolding and a supportive orientation to ensure that all preservice teachers feel comfortable with VR tools (Address et al., 2023).

The diversity in onset ages underscores the heterogeneous technological backgrounds of the cohort. Early adopters may possess advanced familiarity, while the 11.5% who have never used VR represent a population requiring introductory experiences. Self-efficacy theory suggests that without mastery experiences, students will be unlikely to integrate VR into their future teaching. Therefore, teacher education programs must provide incremental, hands-on VR training modules to build competence and confidence.

Conclusion

Implications for Teacher Education

Given these insights, several practical steps emerge. First, embedding VR orientation workshops into the existing methods courses can bridge the gap between informal curiosity and structured learning. Short, hands-on sessions that guide students through basic navigation, troubleshooting, and pedagogical scenarios will build confidence and reduce initial anxiety (Address et al., 2023).

Second, working on VR projects in groups makes learning a more social and meaningful experience. When classmates team up to build a virtual lesson plan, run a simulated class, or tackle a classroom management scenario in VR, they exchange ideas and help one another. This mirrors real teaching, where educators often plan and solve problems together. It also builds community and lowers anxiety about trying new technology alone.

Third, incorporating VR activities into main courses demonstrates to students the value of this technology. For instance, in a science methods class, students can safely do a virtual titration and watch reactions up close (Reeves et al., 2021). In social studies methods, they can “visit” historical sites and discuss what they see, using VR to teach real content. In this way, VR stops being just a fun add-on and becomes a key tool that boosts understanding and interest.

Ultimately, students require ongoing support as they learn to use VR. A buddy system pairs experienced upper-level or graduate students with newcomers to VR. Media labs hold drop-in hours where helpers fix technical issues (Reeves et al., 2021). An online hub offers brief tutorial videos and easy-to-follow guides for quick assistance. With peer mentors, lab support, and these online tools, students build confidence, learn more quickly, and stay motivated.

These steps build a strong VR program. Workshops teach basics. Group projects spark teamwork. In-course VR makes lessons richer. Support systems enable students to experiment without fear of failure. Altogether, these changes help future teachers use VR smoothly and confidently.

Study limitations include the use of self-report data, which can be subject to bias and unreliable proficiency ratings. The descriptive-analytical design does not allow conclusions about cause and effect between how awareness develops and VR use patterns. Future research, such as observational studies or a follow-up survey of one cohort from program initiation to

completion, could reveal changes in VR skills and their integration into the classroom. Tracking confidence over time, comparing different VR systems, or testing the impact of VR lessons on real teaching performance would add value. Longitudinal designs, mixed-methods approaches, and collaboration with schools could also provide deeper insights. Conducting similar research at other Gulf universities could reveal regional trends and inform training and evaluation strategies.

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