ISSN 2303-4521
Periodicals of Engineering and Natural Sciences *Original Research*
Vol. 13, No. 3, July 2025, pp.521-528

Immersive learning of the Sustainable Development Goals (SDGs) in literature from 2020 to 2024

Julio E. Crespo[1*], Cruz García-Lirios[2], Isabel Cristina Rincón-Rodríguez[3], Jorge E. Chaparro-Medina[4], Víctor Hugo Meriño-Córdoba[5], Arturo Sánchez-Sánchez[6], Celia Yaneth Quiroz-Campas[7], María del Rosario Molina-González[8], Miguel Sanhueza-Olave[9]

[1]Universidad de Los Lagos, Osorno, Chile
[2]Universidad de la Salud, CDMX, Mexico
[3]Universidad de Investigación y Desarrollo UDI. Colombia
[4]Universidad Nacional Abierta y a Distancia UNAD, Colombia
[5]Universidad Católica Luis Amigo, Colombia
[6]Universidad Autónoma de Tlaxcala, Mexico
[7]Instituto Tecnológico de Sonora, Navojoa, Mexico
[8]Universidad de Sonora, Novajoa, Mexico
[9]Universidad Tecnológica Metropolitana, Santiago, Chile

*Corresponding author E-mail: jcrespo@ulagos.cl

ABSTRACT

This research presents an innovative approach to immersive learning, defining it as an artificial system that simulates key psychological processes, including memory, language, perception, and human intelligence. Within this framework, the Sustainable Development Goals (SDGs) serve as essential reference points for the literature review. A unique aspect of this study is its comprehensive methodology for searching, analyzing, and modeling categories related to immersive learning and the Sustainable Development Goals (SDGs). The research involved a documentary, transversal, exploratory, and retrospective analysis using a sample of abstracts published in journals indexed in international repositories, along with a keyword search conducted from 2020 to 2024. The findings indicate the presence of awareness nodes, policies, and programs that illustrate the central themes, groupings, and structures of the learning network. The study concludes with a strong recommendation to extend the model for empirical validation and to explore immersive learning scenarios connected to the SDGs in uncertain and contingent contexts, such as during the pandemic. This approach aims to provide a practical tool for educators, psychologists, and professionals in education and sustainable development.

Keywords: Immersive learning, Awareness, SDGs, Policies, Programs

1. Introduction

Immersive learning, a methodology that harnesses advanced technologies to create highly immersive and realistic learning experiences, has a rich historical evolution. In ancient times, role-playing and simulations were employed to impart skills and knowledge. For instance, Roman gladiators honed their skills in simulated arenas, and in the Middle Ages, squires learned to be knights through simulated practice in tournaments. The educational philosophy of 'learning by doing,' championed by educators like John Dewey, laid the theoretical groundwork for more interactive and participatory teaching methods, further advancing the concept of immersive learning. This historical context provides the backdrop for our research, which aims to present a groundbreaking approach to the study of immersive learning and its application to the Sustainable Development Goals (SDGs).

The invention of mechanical simulators, especially in aviation and the military, marked the beginning of the use of technology to create immersive experiences [1]. Pilots trained in cockpits that simulated actual flight

conditions. The first head-mounted display (HMD) was called the " Sword of Damocles." Although primitive, this technology laid the foundation for virtual reality (VR). The development of personal computers allowed the creation of more advanced and accessible simulators. For example, flight simulators and educational games began to use computer-based graphics to create more immersive learning experiences.

Companies like Virtuality Group developed commercial VR systems for entertainment and training [2]. Although expensive and of limited quality, these systems demonstrated the potential of VR in learning. Augmented reality (AR) began to gain traction with the introduction of apps like Layar and the integration of AR capabilities on mobile devices. This technology allowed digital information to be superimposed on the real world, facilitating new forms of educational interaction.

The launch of devices such as Oculus Rift, HTC Vive, and Microsoft HoloLens has revolutionized immersive learning. These technologies enable the creation of highly realistic virtual environments and interactive AR applications across various fields, including medicine and history education. Educational video games have evolved to incorporate interactive 3D environments, offering immersive learning experiences that seamlessly blend fun and education. The practical implications of these advancements are significant, as they provide educators and professionals in psychology, education, and sustainable development a powerful tool to enhance learning and engagement.

Medical, architectural, and engineering simulations use detailed 3D models to teach practical skills in a safe and controlled environment [3]. The concept of the metaverse, a shared virtual space, is beginning to influence education, enabling students and teachers to interact in a unified digital environment. Studies have shown that immersive experiences can enhance information retention and conceptual understanding by providing practical and visual contexts for learning.

With the decreasing costs of technology, immersive experiences are becoming more accessible to educational institutions worldwide, enabling a broader scale and democratization of immersive learning [4]. Integrating artificial intelligence (AI) and machine learning in immersive technologies yields personalized and adaptive learning experiences that cater to students' needs.

Immersive learning has evolved significantly, from mechanical simulators and traditional teaching methods to the advanced virtual and augmented reality technologies of today [5]. With continued technological development, the future of immersive learning promises to be even more innovative and accessible. Immersive learning theory is based on the premise that learning is most effective when students are fully involved and engaged in their educational environment. Several principles and concepts of educational psychology, technology, and pedagogy support this theory.

Immersive learning encourages participation, where students are not mere recipients of information but active participants in the learning process [6]. This participation can include interacting with virtual objects, making decisions, and solving problems in real-time. Immersive environments provide realistic and relevant contexts for learning. This means that students can learn in situations that simulate real-life scenarios, which helps them understand how concepts are applied in practical settings.

Immersive technologies allow for immediate and real-time feedback, which is crucial for learning [7]. This helps students correct errors and improve their skills more efficiently. Immersive learning involves utilizing multiple senses (sight, hearing, touch, etc.), which can enhance information retention and comprehension. Multisensory environments help create more memorable and meaningful learning experiences.

Immersive learning aligns with constructivism, which maintains that learners actively construct knowledge through interaction with the world [8]. In immersive environments, students can explore and manipulate objects and situations, thus building their understanding. Flow theory describes a state of complete concentration and enjoyment in an activity. Immersive environments are designed to induce this state, keeping students fully absorbed and motivated during learning. Learning is a cyclical process that includes concrete experience, reflection, conceptualization, and active experimentation. Immersive environments facilitate this cycle by providing hands-on experiences and opportunities for reflection and application of what is learned. Learning is inherently social and situated in specific contexts. Immersive environments enable students to learn within a social and practical context, thus enhancing knowledge transfer to real-world situations.

Medical students can practice complex procedures in a safe and controlled environment, improving their skills without risk to patients [9]. The military utilizes immersive simulations to train soldiers in combat, enabling them to experience and respond to high-pressure scenarios. Immersive environments enable vocational and

technical students to practice specific skills in a simulated environment that replicates their future work area. Virtual and augmented reality environments can make lessons more engaging and interactive in classrooms, helping students understand abstract concepts through concrete visualizations.

Despite the benefits, the cost and accessibility of immersive technologies can be a barrier [10]. It is essential to work towards solutions that make these technologies more accessible to all educational institutions. The design of immersive learning experiences must be pedagogically well-founded to be effective. Not all immersive applications result in meaningful learning without proper planning and execution. Evaluating the effectiveness of immersive learning can be a complex process. It is necessary to develop evaluation methods that adequately capture the impact of these experiences on learning.

Immersive learning theory combines constructivism, flow, experiential, and situated learning to create highly effective and engaging learning environments [11]. As technology advances, the possibilities for immersive learning continue to expand, offering new ways of teaching and learning that can transform education on multiple levels.

The most up-to-date and specialized immersive learning model incorporates recent advances in technology and pedagogy to create more effective and personalized learning experiences [12]. Utilize devices like the Oculus Rift, HTC Vive, or similar devices to create fully immersive virtual environments where students can interact with content in a fully immersive manner. Mobile devices, tablets, or AR glasses like Microsoft HoloLens can overlay digital information in the real world, allowing real-time contextual interactions. Analyze student progress and dynamically adjust content and difficulty of material based on individual needs. Provides real-time assistance, answering questions and guiding students through lessons. Includes points, levels, rewards, and challenges to increase student motivation and engagement. They use realistic game scenarios to teach specific skills, such as medical or business management simulations. It allows students to collaborate in real-time in virtual environments, such as virtual meeting rooms or laboratories. Encourages peer interaction and collaborative learning through forums, chats, and group projects. It uses virtual environments to conduct practical assessments where students apply their knowledge in simulated situations. Provides instant feedback based on student performance on tasks and activities.

However, immersive learning appears to have developed in a stable, controllable, programmed, and sequenced simulation environment, inhibiting users' ability to perceive risks, vulnerabilities, resilience, and stigma [13]. Therefore, observing immersive learning in uncertain and contingent scenarios is necessary.

This work aimed to analyze the relationship between the Sustainable Development Goals (SDGs) and Human Development through immersive learning, as published in the literature from 2020 to 2023.

Are there significant differences between the SDGs disseminated on socio-digital networks and immersive learning of the SDGs in the classroom?

Hypothesis. Given that the SDGs can be reduced to a concise expression for teaching and learning in the classroom, significant differences are expected between the universal guidelines and their dissemination through gamification, augmented reality, or virtual reality [14]. Suppose the SDGs can be made accessible through immersive learning. In that case, it will be possible to find a sufficient volume of literature to support the reduced diffusion of the SDGs in the classroom through Comprehensive Disaster Risk Management (CDRM) paradigms or International Protection Frameworks for Civil (IPFC) [15]. In this way, the differences in general and immersive content suggest differences in gamification, augmented reality, or virtuality in Higher Education Institutions (HEIs). If there are differences between higher education institutions (HEIs) regarding the immersive dissemination of the Sustainable Development Goals (SDGs), then impacts on socio-digital networks will be anticipated [16]. In other words, the diffusion and impact on Facebook will differ from YouTube or WhatsApp.

2. Research method

Design. A documentary, cross-sectional, retrospective, and exploratory study was conducted using a sample of sources indexed in international repositories, focusing on the search by keywords “Immersive Learning” and “SDG” from 2020 to 2024.
Instrument. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) is a tool designed to enhance the presentation of systematic reviews and meta-analyses.

Procedure. PRISMA guidelines were followed to conduct the review. The databases included were PubMed, ERIC, Scopus, and Web of Science. Studies that implemented virtual reality (VR), augmented reality (AR) technologies, and immersive simulations in Sustainable Development Goals (SDG) education were included. ("immersive learning" OR "virtual reality" OR "augmented reality" OR "immersive simulation") AND ("sustainable development goals" OR "SDGs" OR "SDGs") AND ("2020"[Date - Publication]: "2024 "[Date - Publication]). Removal of duplicates: Using reference management software (EndNote, Mendeley). Review of titles and abstracts: By two independent reviewers. Review of full texts to determine final eligibility. A third reviewer resolved discrepancies using the Cochrane Risk of Bias Tool for controlled trials and the Newcastle-Ottawa Scale for observational studies.

Analysis. The results were captured in Excel and processed in JASP version 18.2 to estimate the centrality, grouping, and structuring analysis parameters that test the hypothesis regarding the significant differences between the theory and the review. Values close to unity were assumed as evidence of non-rejection of the hypothesis.

3. Results and discussion

The centrality analysis defines the central node around which the rest of the SDG immersive learning network revolves (see Table 1). The results demonstrate the prevalence of policies as part of the commitment to immersive learning.

Table 1. Centrality measures per variable

Variable	Network			
	Betweenness	Closeness	Strength	Expected influence
Awareness	-0.846	-0.899	-1,127	-1,195
Education	0.308	0.250	0.482	-0.509
Training	0.769	0.120	0.450	0.016
Projects	-0.385	0.054	0.586	1,332
Programs	1,000	0.886	0.174	1,100
Alliances	-0.385	0.781	0.848	-1,077
Curriculum	-0.846	-1,538	-1,561	0.339
Policies	2,384	1,625	1,530	1983
Assessment	-0.846	-1,506	-1,484	-0.467
Strategy	-0.615	0.154	-0.048	-0.690
Innovation	0.308	0.878	0.853	-0.618
Sustainability	-0.846	-0.804	-0.703	-0.214

The clustering analysis defines the degree of profusion in which the attractor node reconfigures the SDG immersive learning network (see Table 2). The findings indicate a high degree of attraction to other nodes among the programs. In this sense, the SDG immersive learning network surrounds the programs.

Table 2. Clustering measures per variable

Variable	network			
	Barrat	Onnela	W.S.	Zhang
Policies	0.667	2,039	0.095	-1,486
Assessment	-0.786	-0.980	-1,562	0.352
Strategy	0.725	-0.076	0.095	0.807
Innovation	-0.348	0.256	-1,015	0.239
Sustainability	0.362	-0.360	1927	1,505
Awareness	-0.120	-1,467	-0.719	0.172
Education	-0.328	0.539	0.095	1,504
Training	-1,765	-0.727	0.095	-0.856
Projects	0.024	0.644	-0.108	-0.296
Programs	2,340	0.968	1,055	-1,587
Alliances	-0.657	0.292	-1,015	-0.225
Curriculum	-0.113	-1,129	1,055	-0.128

The structuring analysis suggests the degree of learning of the immersive network by establishing the beginning and end of the process (see Table 3). The results demonstrate that awareness and policies represent the beginning and culmination of immersive learning of the SDGs. In this way, the SDGs begin with awareness and progress to a political level.

Table 3. Weight matrix

	Network											
Variable	Awareness	Education	Training	Projects	Programs	Alliances	Curriculum	Policies	Assessment	Strategy	Innovation	Sustainability
Awareness	0.000	-0.026	0.214	0.000	-0.316	-0.180	0.030	0.220	-0.038	-0.253	-0.026	0.029
Education	-0.026	0.000	-0.457	0.634	0.141	-0.168	0.000	-0.334	-0.095	-0.018	0.178	0.321
Training	0.214	-0.457	0.000	0.702	0.374	0.003	0.172	-0.153	0.000	-0.066	-0.210	$-9{,}100\times10^{-4}$
Projects	0.000	0.634	0.702	0.000	0.000	0.219	-0.078	0.206	0.052	0.179	0.018	-0.352
Programs	-0.316	0.141	0.374	0.000	0.000	0.430	0.000	0.000	-0.070	0.023	0.495	0.325
Alliances	-0.180	-0.168	0.003	0.219	0.430	0.000	-0.036	0.402	-0.244	-0.345	-0.460	0.122
Curriculum	0.030	0.000	0.172	-0.078	0.000	-0.036	0.000	0.237	0.237	0.230	0.031	0.000
Policies	0.220	-0.334	-0.153	0.206	0.000	0.402	0.237	0.000	0.263	0.550	0.529	0.155
Assessment	-0.038	-0.095	0.000	0.052	-0.070	-0.244	0.237	0.263	0.000	0.000	0.102	0.000
Strategy	-0.253	-0.018	-0.066	0.179	0.023	-0.345	0.230	0.550	0.000	0.000	-0.313	0.051
Innovation	-0.026	0.178	-0.210	0.018	0.495	-0.460	0.031	0.529	0.102	-0.313	0.000	-0.250
Sustainability	0.029	0.321	$-9{,}100\times10^{-4}$	-0.352	0.325	0.122	0.000	0.155	0.000	0.051	-0.250	0.000

The parameters of centrality, grouping, and structuring suggest that the hypothesis related to the differences between the theories of immersive learning concerning the observations made in the literature on immersive learning of the SDGs is not rejected. This work's significant contribution is establishing an immersive learning network focused on Sustainable Development Goals (SDGs). By reviewing and comparing theoretical frameworks, observations, and analyses, the study highlighted the prevalence of policies, programs, and awareness as crucial elements of the learning network identified and analyzed in literature published between 2020 and 2024.

The United Nations has established 17 Sustainable Development Goals (SDGs) to encourage developed and developing countries to work towards a more sustainable future [17], [18]. Immersive learning approaches have increasingly been used to teach and engage students in understanding and contributing to the SDGs [19]. Leveraging immersive learning and digital engagement can be crucial in advancing the Sustainable Development Goals (SDGs) [20]. Immersive technologies, such as Virtual Reality (VR), have enhanced young people's creativity and learning experiences related to the Sustainable Development Goals (SDGs) [21]. Furthermore, immersive learning approaches have been implemented in various educational settings, ranging from classrooms to boardrooms, to address different Sustainable Development Goals (SDGs), such as poverty reduction and sustainable education [22]. Immersive worlds have also been used in initial teacher training programs to simulate sustainable educational practices [23]. The use of immersive learning to address the climate emergency and achieve the Sustainable Development Goals has been a focus of research and debate in various academic environments [24]. The dissemination of the SDGs through virtual platforms has intensified immersive learning experiences and contributed to a better understanding of the goals [25]. Immersive learning has shown promise in teaching and promoting awareness of the Sustainable Development Goals (SDGs), offering a unique and engaging approach to education and sustainable development [26]. Women are more likely to learn through augmented, gamification, or virtual reality [27]. Furthermore, in interaction with age, its effect decreases; however, regarding benefits, its predictive power also decreases, so it is the gender condition that ultimately determines the effectiveness of immersive learning. The regression parameters indicate that immersive learning is reflected in the use of augmented reality, gamification, or virtuality.

In this work, the prevalence of awareness, policies, and programs linked to the SDGs has been established as the prevailing nodes about the SDGs. However, it is recommended that the model be extended to contrast it empirically and demonstrate the dependency relationships that the results suggest [28]. Such empirical contrast will enable us to anticipate immersive learning scenarios related to the SDGs in contingent situations, such as the pandemic.

4. Conclusions

This study establishes a network model of immersive learning on social gaming devices (SGDs). While awareness, policies, and programs are widespread, it is essential to examine their interdependencies with sociodemographic, socioeconomic, and socio-educational variables. It should be noted that the study's results cannot be generalized due to the intentional selection of the sample.

Declaration of competing interest

The authors declare that they have no conflicts of interest, and all authors agree to publish this paper by the principles of academic ethics.

References

[1] P. MacDowell (2023). VR let my creativity out: Youth creating with immersive learning technologies. *International Journal of Emerging and Disruptive Innovation in Education*: VISIONARIUM, 1 (1), 3. https://digitalcommons.lindenwood.edu/ijedie/vol1/iss1/3/

[2] K. Moskalyk, N. Lamoureux and P. MacDowell (2023). Diving into SDG 14, life below water: A VR experience for deeper understanding. *Immersive Learning Research-Practitioner*, 117-122. https://publications.immersivelrn.org/index.php/practitioner/article/view/51

[3] J. E. Crespo, C. García-Lirios, G. Moreno, J. M. Sepúlveda and M. Sanhueza (2023). Learning of the Sustainable Development Goals (SDG) at a Public University in Central Mexico. *Kurdish Studies*, 11 (2), 6057-6063.

[4] T. Wood Jr and L. Pansarella (2019). Inside the borders but outside the box: An immersion program aligned with the PRME and the SDG to foster reflexivity. *The International Journal of Management Education*, 17 (3), 100306. https://www.sciencedirect.com/science/article/pii/S1472811718304257

[5] C. E. Karayel, M. Krug, L. Hoffmann, C. Kanbur, C. Barth and J. Huwer, J. (2022). ZuKon 2030: An innovative learning environment focused on sustainable development goals. *Journal of Chemical Education*, 100 (1), 102-111. https://pubs.acs.org/doi/abs/10.1021/acs.jchemed.2c00324

[6] A. Audiffred Hinojosa (2021). Challenge-based learning 360 filmmakers: perspectives and advance positive action toward the Sustainable Development Goals to empower learners as creators and changemakers. In *Ninth International Conference on Technological Ecosystems for Enhancing Multiculturality* (TEEM'21) (pp. 784-788). https://dl.acm.org/doi/fullHtml/10.1145/3486011.3488060

[7] P. L. Chien, K. Namba and E. Su (2024). Development of 360-degree virtual reality Chinese CLIL: Learning material for intercultural understanding integrated with sustainable development goals (SDGs) for regional revitalization. In *12th International Conference on Information and Education Technology (ICIET)* (pp. 143-148). IEEE. https://ieeexplore.ieee.org/abstract/document/10542794/

[8] J. Fang and J. O'Toole (2023). Embedding sustainable development goals (SDGs) in an undergraduate business capstone subject using an experiential learning approach: A qualitative analysis. *The International Journal of Management Education*, 21 (1), 100749. https://www.sciencedirect.com/science/article/pii/S1472811722001513

[9] F. J. Sandoval-Henríquez, F. Sáez-Delgado and M. G. Badilla-Quintana (2024). Systematic review on the integration of immersive technologies to improve learning in primary education. *Journal of Computers in Education*, 1-26. https://link.springer.com/article/10.1007/s40692-024-00318-x

[10] J. Pfeiffer, J. Fegert, A. Greif- Winzrieth, G. Hoffmann and C. Peukert (2021). Can immersive systems help address sustainability goals? Insights from research in information systems. *Market Engineering: Insights from Two Decades of Research on Markets and Information*, 135-150. https://library.oapen.org/bitstream/handle/20.500.12657/48685/9783030666613.pdf#page=141

[11] E. Fröhlich, M. A. Schmitz and S. Damme (2021). The "Sustainable Development Goals (SDG) Teaching Map" and other innovative teaching formats. In *Universities, Sustainability and Society: Supporting the Implementation of the Sustainable Development Goals* (pp. 483-499). Cham: Springer International Publishing. https://link.springer.com/chapter/10.1007/978-3-030-63399-8_31

[12] Y. Zhang, M. Sarantou and C. Cruz (2023). An education model for creating engagement in SDG action. In Derek Jones, Naz Borekci, Violeta Clemente, James Corazzo, Nicole Lotz, Liv Merete Nielsen, Lesley-Ann Noel (eds.), *The 7th International Conference for Design Education Researchers*, 29 November - 1 December 2023, London, United Kingdom. https://doi.org/10.21606/drslxd.2024.053

[13] S. M. Devassy, L. Scaria, J. Metzger, K. Thampi, J. Jose and B. Joseph (2023). Development of immersive learning framework (ILF) in achieving the goals of higher education: measuring the impact using a pre-post design. *Science Reports*, 13 (1), 17692. https://www.nature.com/articles/s41598-023-45035-0

[14] G. Makransky and G. B. Petersen (2021). The cognitive-affective model of immersive learning (CAMIL): A theoretical research-based model of learning in immersive virtual reality. *Educational Psychology Review*, 1-22.

[15] M. A. Kuhail, A. ElSayary, S. Farooq and A. Alghamdi (2022). Exploring immersive learning experiences: A survey. In *Informatics* (Vol. 9, No. 4, p. 75). MDPI.

[16] S. Mystakidis and V. Lympouridis (2023). Immersive Learning. *Encyclopedia*, 3 (2), 396-405.

[17] J. E. Crespo, S. Dutra e Silva and D. Caldevilla Domínguez (2022). Sostenibilidad y desarrollo en una sociedad multicultural. *Revista de Filosofía* 39(100), 92-103. https://doi.org/10.5281/zenodo.5979746

[18] E. Doone, M. Abreh, C. Mills and C. Sungdong (2023). Addressing SDG targets through the lens of an innovative service-learning program. In *INTED2023 Proceedings* (pp. 3480-3488). IATED. https://library.iated.org/view/DOONE2023ADD

[19] S. N. Chapman and L. O'Gorman (2022). Transforming learning environments in early childhood contexts through the arts: Responding to the United Nations Sustainable Development Goals. *International Journal of Early Childhood*, 54 (1), 33-50. https://link.springer.com/article/10.1007/s13158-022-00320-3

[20] S. O. Makinde, Y. A. Ajani and M. R. Abdulrahman (2023). Smart Learning as Transformative Impact of Technology: A Paradigm for Accomplishing Sustainable Development Goals (SDGs) in Education. Indonesian *Journal of Educational Research and Technology*, 4 (3), 213-224. https://ejournal.upi.edu/index.php/IJERT/article/view/66097/0

[21] M. Kalla, M. Jerowsky, B. Howes and A. Borda (2022). Expanding formal school curricula to foster action competence in sustainable development: A proposed free-choice project-based learning curriculum. *Sustainability*, 14 (23), 16315. https://www.mdpi.com/2071-1050/14/23/16315

[22] S. Thombre, H. Wadkar and M. Velankar (2024). Fostering Higher Education Engagement with the United Nations' Sustainable Development Goals: A Transformative Pedagogical Approach. In *Rethinking ICT Adoption Theories in the Developing World: Information and Communication Technologies* (pp. 227-248). Cham: Springer Nature Switzerland. https://link.springer.com/chapter/10.1007/978-3-031-57880-9_11

[23] M. Mentzelopoulos and D. Bass-Clark (2021). Special Session—Students on Game Immersion Workshop. In *7th International Conference of the Immersive Learning Research Network (iLRN)* (pp. 1-2). IEEE. https://ieeexplore.ieee.org/abstract/document/9459346/.