Co-funded by the European Union

Eco360

Immersive sustainability and STEAM education through Eco360 interactive learning environments

Needs and Practices in Sustainability and Immersive Education

Educator Survey Analysis Report

Funded by the European Union. However, the views and opinions expressed are solely those of the author(s) and do not necessarily reflect those of the European Union or the Nationalen Agentur im Pädagogischen Austauschdienst. Neither the European Union nor the granting authority can be held responsible. **Project code:** 2024-1-DE03-KA220-SCH-000256179

List of Contents

Introduction 3

Summary of Survey Responses 4

Section 1: General Information 4

1. What is your role in education? 4
2. How many years of teaching experience do you have? 5
3. Which subject(s) do you teach? 5
4. What country do you work in? 6

Section 2: Current Practices & Challenges in Sustainability Education 6

5. How often do you incorporate sustainability topics into your lessons? 6
6. Which sustainability topics do you cover in your lessons? 7
7. What teaching methods do you use to teach sustainability topics? 8
8. What are the biggest challenges you face when trying to teach sustainability? 8
9. What support or resources would help you improve sustainability education in your classroom? 9

Section 3: Familiarity with 360-Degree Video 10

10. Have you ever used 360-degree video or virtual reality (VR) in your classroom? 10
11. If YES, in what context did you use 360-degree video or VR in your lessons? Skip if you answered NO in question 10. 11
12. What challenges did you face when using 360-degree video or VR in your lessons? Skip if you answered NO in question 10. 11
13. If you had access to 360-degree video tools, how likely would you be to use them in your classroom? 12
14. What kind of support would help you use 360-degree video in your lessons? 13

Section 4: Input for the Introductory Guide 14

15. What type of resources would be most useful for you in an Introductory Guide on Sustainability Education and 360-degree video? 14
16. What would you like to see included in the Introductory Guide? 14

Recommendations and Key Findings 16

Conclusion 18

Introduction

This report summarises the findings of the Eco360 Needs Analysis Survey, conducted as part of WP2.A1 - Introductory guide and best practices under the EU Project Eco360: Immersive Sustainability and STEAM Education through Eco360 Interactive Learning Environments (Project Reference: 2024-1-DE03-KA220-SCH-000256179).

The survey aimed to assess the experiences, challenges, and needs of educators regarding sustainability education and the use of 360-degree video technology in their classrooms.

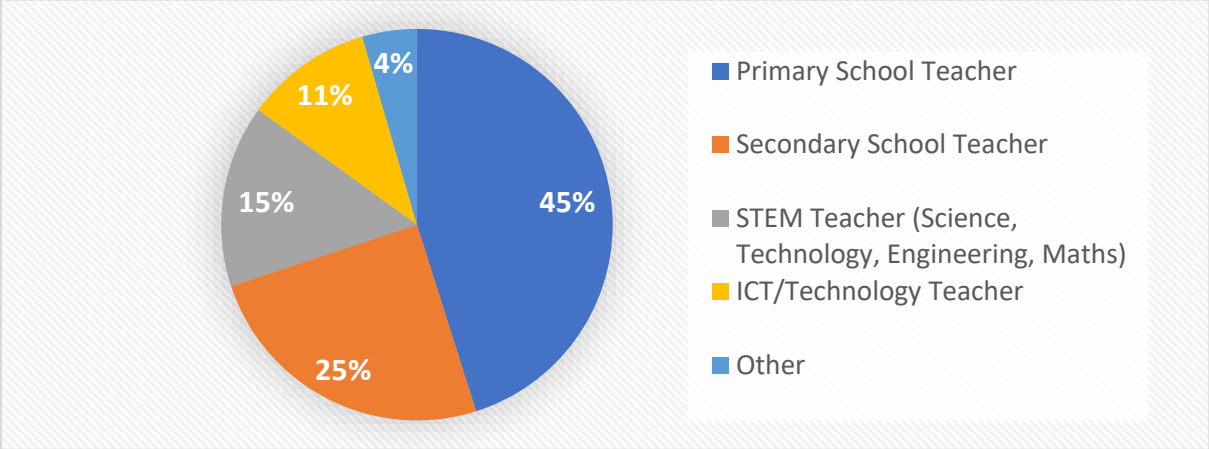
A total of 114 responses were collected across five countries: Germany (7), Greece (11), Serbia (53), Slovenia (39), and Portugal (4).

The results are intended to guide the development of the project's outputs within WP2, including an Introductory Guide for educators, lesson plans and training modules.

Summary of Survey Responses

Section 1: General Information

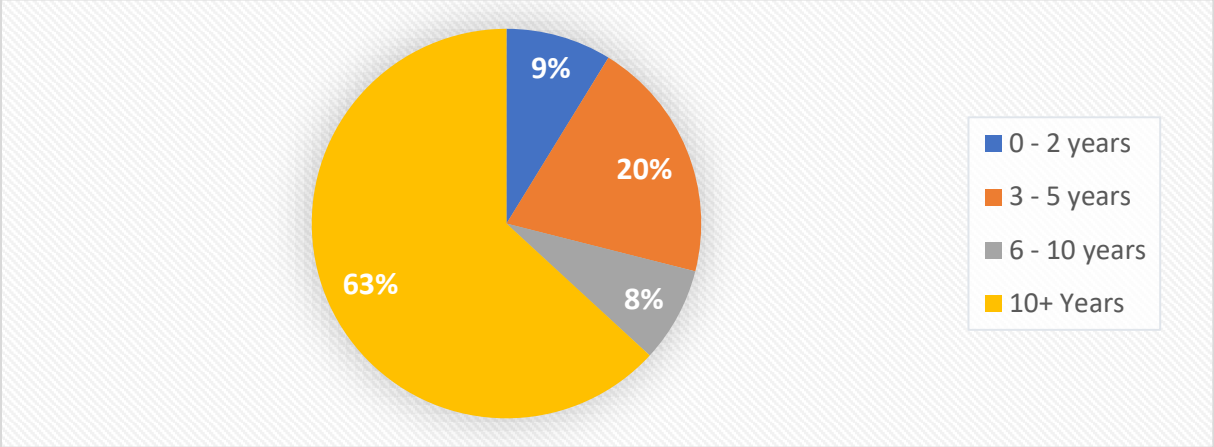
1. What is your role in education?



Among 114 respondents, several selected more than one role. 53% (60 responses) identified as Primary School Teachers, followed by 29% (33 responses) who selected Secondary School Teacher. 18% (20 responses) chose STEM Teacher, and 12% (14 responses) selected ICT/Technology Teacher. Additionally, 5% (6 responses) selected "Other," which includes EU project developers, Assistant Principals, an Educational Specialist / Pedagogue, and a Counsellor.

In general, the results show that there was a broad participation from educators at all levels. There is a notable presence of STEM and ICT taechers which adds perspectives from more technically oriented disciplines, while those who selected "Other" contribute views from project coordination, leadership, and support roles within education.

2. How many years of teaching experience do you have?



Most respondents are experienced educators. Over 60% have more than 10 years of teaching experience, while a smaller group has between 3 to 5 years. Only a few have less than 3 years or between 6 to 10 years of experience.

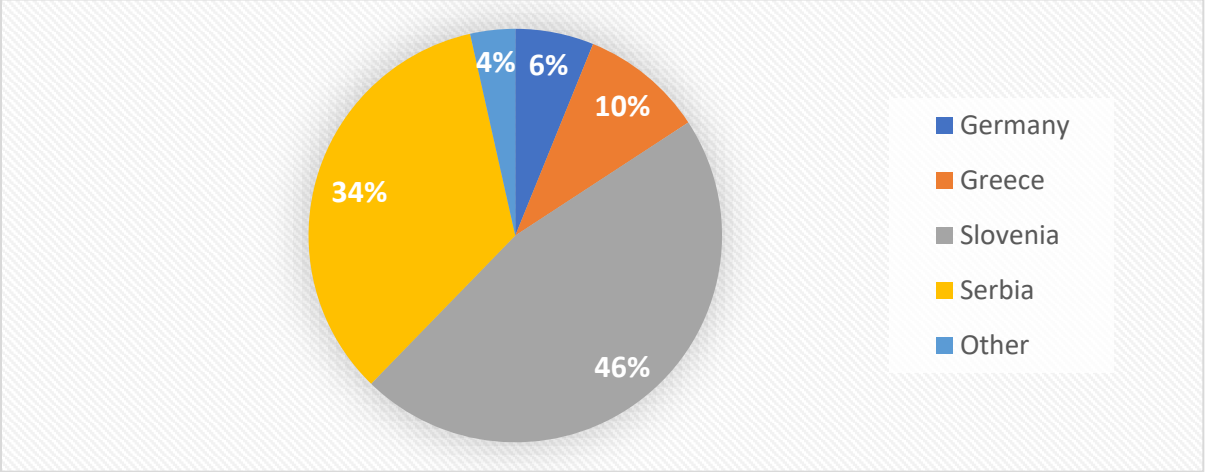
3. Which subject(s) do you teach?

The respondents span a wide range of educational levels and subjects, with a significant emphasis on STEM subjects, particularly.

- Mathematics
- Physics
- Computer Science

A substantial proportion also teaches Primary School subjects in an integrated manner. Additionally, there is representation from Vocational, Language, Arts, and Social Science educators.

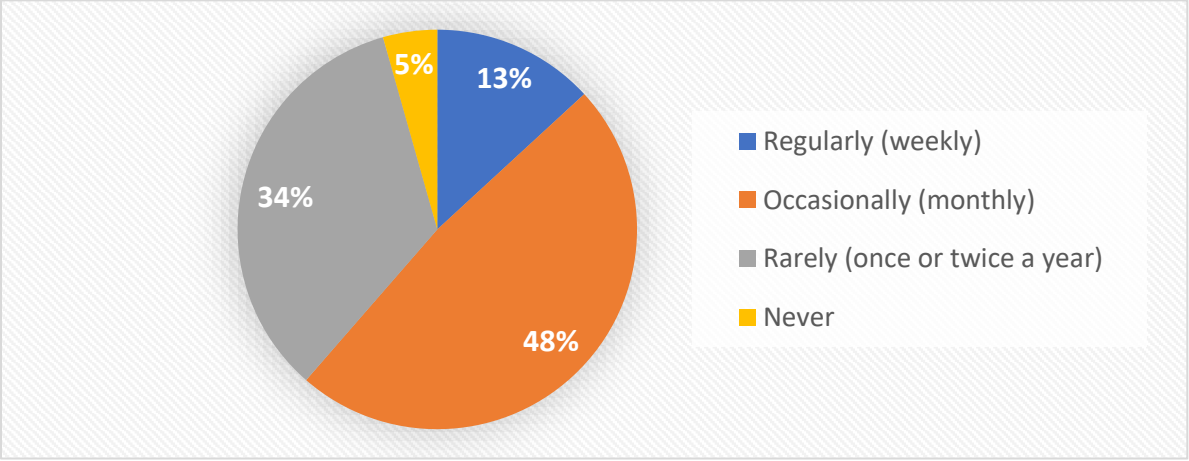
4. **What country do you work in?**



The majority of participants work in Slovenia, with 46% (53 responses), and Serbia, with 34% (39 responses), making up around 80% of the total. Smaller groups are from Greece, 10% (11 responses), and Germany, 6% (7 responses). Additionally, 4% (4 responses) indicated countries outside of the partnership, specifically Portugal.

Section 2: Current Practices & Challenges in Sustainability Education

5. **How often do you incorporate sustainability topics into your lessons?**

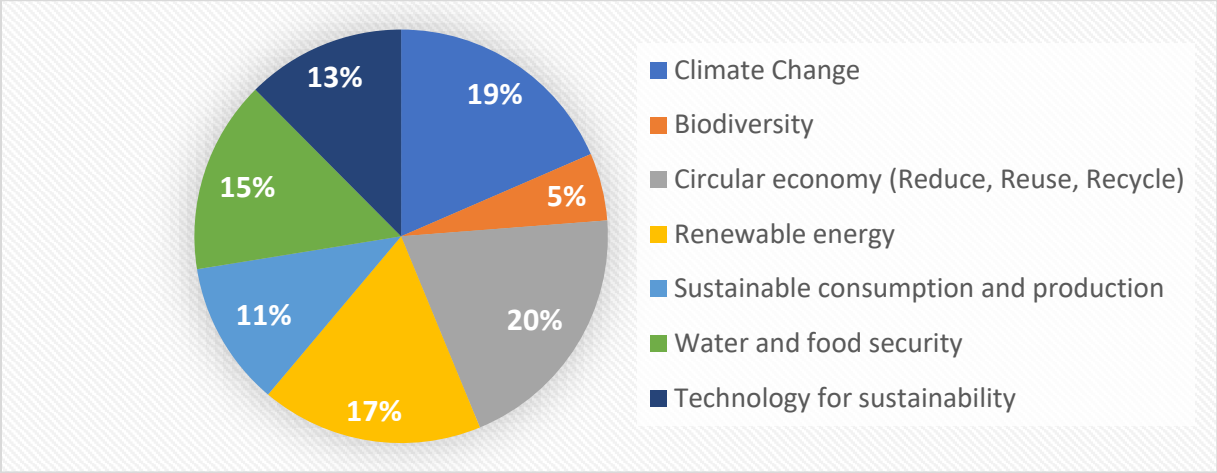


Most participants incorporate sustainability topics occasionally (monthly), with 48% (55 responses). 34% (39 responses) address these topics rarely, typically once or twice a year.

Only 13% (15 responses) integrate sustainability regularly (weekly), while 4% (5 responses) reported never including such topics in their lessons.

This suggests **sustainability is present in most classrooms**, but **often not as a regular focus.**

6. Which sustainability topics do you cover in your lessons?



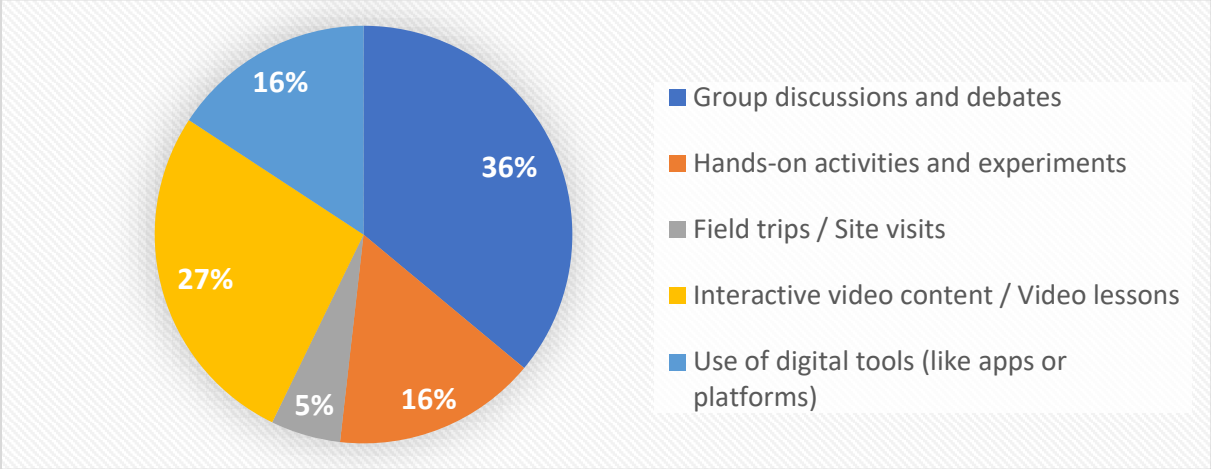
The most frequently covered sustainability topics are **Circular Economy (Reduce, Reuse, Recycle)**, covered by 20% of respondents (53), followed by **Climate Change**, addressed by 19% (49), and **Renewable Energy**, included by 17% (46).

Other topics include:

- **Water and Food Security** – 15% (40 responses)
- **Technology for Sustainability** – 13% (33 responses)
- **Sustainable Consumption and Production** – 11% (30 responses)
- **Biodiversity** – 5% (14 responses)

No other topics were mentioned.

7. What teaching methods do you use to teach sustainability topics?



The survey results show a clear preference for interactive and discussion-based teaching methods when addressing sustainability topics in the classroom.

- **Group Discussions and Debates** are the most commonly used method, selected by 36% of respondents (81 responses).
- **Interactive Video Content / Video Lessons** are used by 27% (60 responses).
- **Hands-on Activities and Experiments** and **Digital Tools (apps/platforms)** are each used by 16% (35 responses).
- Finally, **Field Trips / Site Visits** are the least used method, mentioned by only 11% (12 responses).

No further methods were mentioned.

8. What are the biggest challenges you face when trying to teach sustainability?

Teachers face several key challenges when integrating sustainability topics into their lessons. The most common issue is a **lack of time due to packed curricula**, leaving little room to introduce new themes like sustainability. Many educators find that these topics are **not well integrated into the official syllabuses**, making it difficult to prioritise them during class time.

A **lack of teaching materials** is another frequent problem. Teachers mention that they need **engaging resources that are ready to be implemented** to effectively teach sustainability, particularly in subjects where sustainability is traditionally not a main topic of the curricula. **Student motivation** is also a concern; some students show **little interest** or **reject sustainability for political reasons** which makes it harder to engage with them.

Additionally, there is often **limited institutional support**. Teachers cite a **lack of funding, equipment, and training** for sustainability initiatives. Moreover**, classrooms are sometimes overcrowded** and the **facilities are outdated** which further makes it harder to implement hands-on activities. Some educators also mention their own **need for more training** to confidently teach these topics.

In summary, integrating sustainability into education requires **more time, resources, institutional support**, and **professional development opportunities** for teachers. Without these, sustainability often remains a secondary focus.

9. What support or resources would help you improve sustainability education in your classroom?

Teachers highlighted several key types of support and resources that would enhance their ability to teach sustainability topics effectively. The most frequently mentioned resource is **video materials** - **short, engaging, and informative videos** are seen as highly useful for capturing students' attention and explaining complex sustainability concepts in an accessible way.

A significant number of teachers expressed the need for **ready-made lesson plans and teaching materials**. These resources would **save preparation time** and ensure that lessons are **well-structured and aligned with sustainability goals**. Teachers have also required **immersive technologies**, such as **virtual and augmented reality tools**, to create more **interactive and impactful learning experiences**.

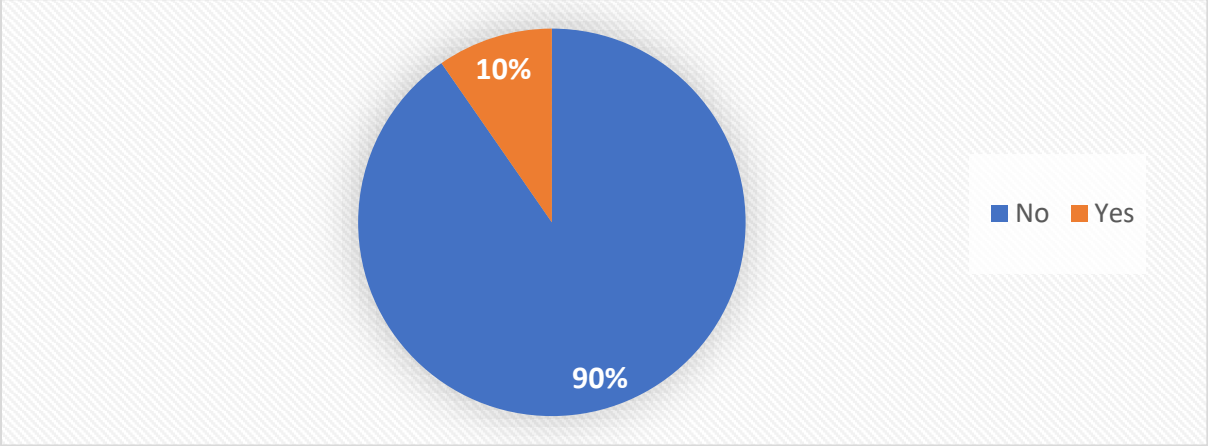
Additionally, respondents requested **greater flexibility within curricula** and **reduced administrative constraints** in order to allow them to integrate sustainability topics more easily into existing subjects. Some suggested **professional development and training** to better equip them to teach sustainability content.

Other notable requests include **funding for materials and equipment**, **collaboration with external experts**, and **school leadership support**. Teachers also mentioned the benefit of **field trips and community partnerships** to provide real-life learning experiences related to sustainability.

In general, educators need **practical, ready-to-use resources**, **technological tools**, and **institutional support** to effectively deliver sustainability education.

Section 3: Familiarity with 360-Degree Video

10. Have you ever used 360-degree video or virtual reality (VR) in your classroom?



The **vast majority of respondents**, 90% (103), **have never used 360-degree video or virtual reality (VR) in their classrooms**. Only 11 participants reported having incorporated these technologies into their teaching.

This highlights **a significant gap in the adoption of immersive technologies in education**, suggesting either limited access, lack of training, or unfamiliarity with these tools among most educators.

11. If YES, in what context did you use 360-degree video or VR in your lessons? Skip if you answered NO in question 10.

Only a **few respondents** reported using **360-degree video** or **virtual reality (VR)** in their lessons. Those who did applied it in **diverse ways**, including:

- **Virtual tours** of museums and historical sites (e.g., Ellis Island).
- **Simulations** of natural environments like the Amazon rainforest and savannas.
- **Immersive experiences** such as flying over volcanoes or diving with sharks.
- **Safety education**, including **traffic simulations** and **internet safety escape rooms.**
- **Digital twins** used in **practical lessons** and **open curriculum.**

Overall, although the **use of 360-degree video and VR remains limited**, the examples above demonstrate that there are multiple creative ways to implement these tools effectively. This, in turn, leads to **increased student engagement**, provides **immersive learning experiences**, and allows the **simulation of environments** that are otherwise **inaccessible in traditional classroom settings**.

12. What challenges did you face when using 360-degree video or VR in your lessons? Skip if you answered NO in question 10.

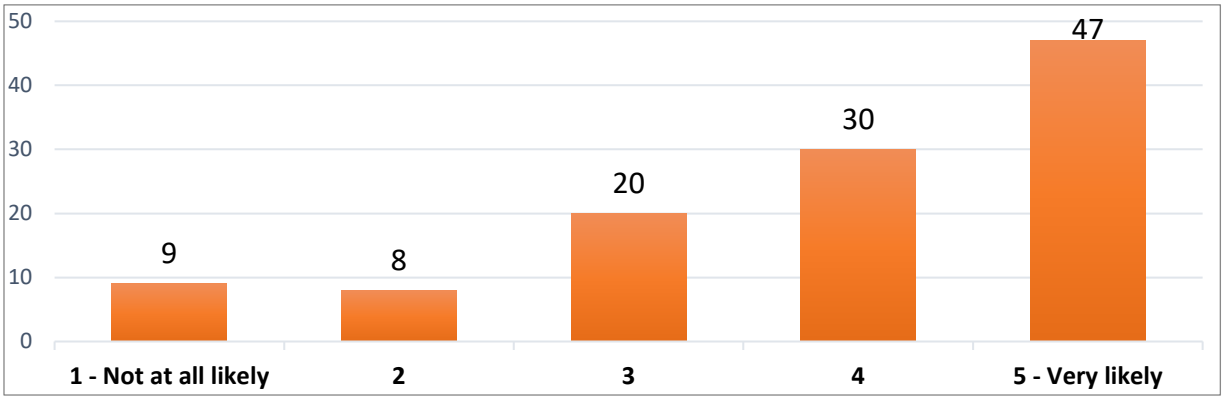
The most frequently reported challenge was **lack of equipment**, as many respondents noted that they did not have access to VR headsets, 360-degree cameras, or other necessary hardware. Some mentioned using only basic tools, such as mobile phones, which limited the immersive experience. **Technical skills** were also a barrier, as some teachers felt unprepared to use or troubleshoot the tools. Additional difficulties included

time constraints, **limited financial resources**, and **inaccessibility of suitable platforms or software** for creating and using 360-degree content.

A few respondents cited minor physical issues like **nausea**, while others pointed to **school-level barriers**, such as lack of administrative support or restrictive IT policies.

Several educators simply stated they had **not yet used** 360-degree video, often due to the obstacles mentioned above.

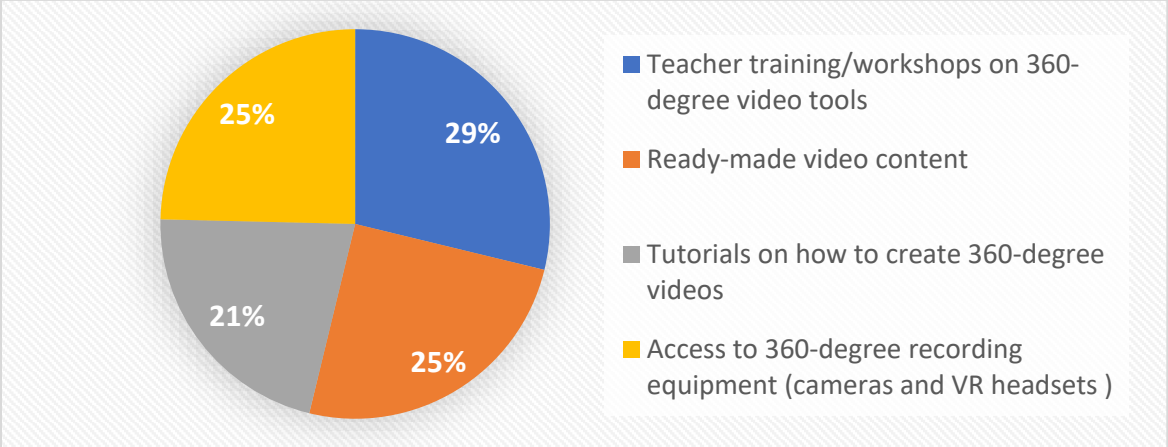
13. If you had access to 360-degree video tools, how likely would you be to use them in your classroom?



The responses indicate a **generally positive attitude** towards the potential use of **360-degree video tools** in the classroom. A total of **77 participants (67%)** rated their likelihood of use as **4 or 5**, with **47 respondents (41%)** marking **"Very likely"**. This suggests a **strong interest** and **openness to adopting immersive technologies** if they were made available.

Only **17 participants (15% in total)** expressed **low interest** (ratings of 1 or 2), indicating that while **barriers such as lack of equipment or training may exist**, many educators **recognise the value** of integrating **360-degree video and VR** into their teaching practices.

14. What kind of support would help you use 360-degree video in your lessons?



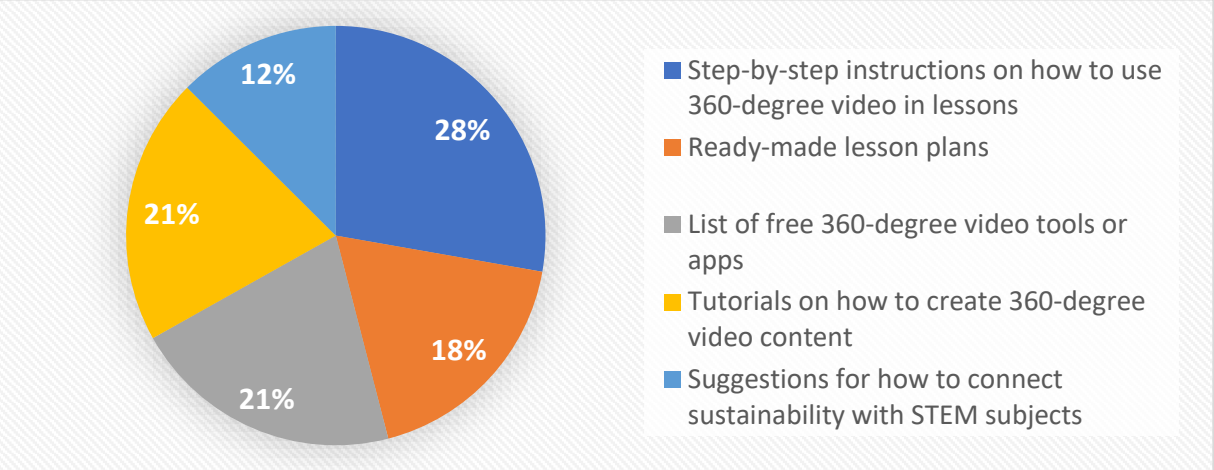
The survey highlights **four priority areas of support** that educators need to successfully integrate 360-degree video into their teaching:

1. **Teacher Training and Workshops** – 29% (76 respondents) mentioned that this is the most requested form of support. Educators need structured, hands-on professional development to build confidence and competence in using 360-degree tools.
2. **Ready-Made Video Content** –25% (66 respondents) expressed that there is strong demand for pre-made, high-quality 360-degree video materials that can be easily integrated into lessons without requiring additional preparation.
3. **Access to 360-Degree Recording Equipment** –25% (65 respondents) highlighted the need for physical tools such as 360-degree cameras and VR headsets, indicating that hardware availability is a significant barrier.
4. **Tutorials on Creating 360-Degree Videos** –21% (57 respondents) mentioned interest in practical guides and tutorials for producing their own content, showing a desire for content creation skills in addition to consuming pre-made resources.

The responses to this question were well-balanced across the four provided options, with no additional suggestions offered by participants. This indicates clear and consistent priorities among educators, focused equally on training, ready-made content, tutorials, and access to equipment.

Section 4: Input for the Introductory Guide

15. What type of resources would be most useful for you in an Introductory Guide on Sustainability Education and 360-degree video?



The most requested resource is **step-by-step instructions on how to use 360-degree video in lessons**, selected by **93 respondents (28%)**. This is followed by a **list of free 360-degree video tools or apps**, chosen by **70 respondents (21%)**, and **tutorials on how to create 360-degree video content**, cited by **69 respondents (21%)**.

Ready-made lesson plans were also highly valued, with **61 respondents (18%)** identifying them as useful. Additionally, **suggestions for how to connect sustainability with STEM subjects** were noted by **42 respondents (12%)**.

This feedback indicates a clear need for **practical, accessible resources** that support the **integration of 360-degree video and sustainability content** into teaching practices.

16. What would you like to see included in the Introductory Guide?

Respondents expressed a strong preference for **highly practical, concise, and ready-to-use resources** in the Introductory Guide. Many highlighted the need for **step-by-step instructions**, **lesson plans**, and **tutorials**, particularly aimed at **teachers with limited time** for preparation. There was a clear emphasis on **practical examples of good**

practice, **sample lesson scenarios**, and **lists of recommended tools or apps**, which would make it easier for educators to implement both **360-degree video** and **sustainability topics** in their classrooms without requiring extensive research or additional effort.

In addition, respondents requested **guidelines on how to connect sustainability with STEAM subjects**, as well as **recommendations on appropriate equipment** and **tips for integrating VR/AR technologies** effectively into their teaching practice. Some participants also suggested the inclusion of **games**, **quizzes**, and **interactive materials** designed to **engage students** more actively in the learning process. A few emphasised the importance of addressing **real-world applications** through **project-based learning** and recommended that resources be **adaptable for different age groups** and **levels of language competence**.

Moreover, several respondents underlined the need for **funding opportunities**, **technical support**, and **pilot testing with small groups** before wider classroom adoption. There was also significant interest in fostering **interdisciplinary collaboration** and including **examples of successful projects** (good practices) already implemented by other educators.

In summary, teachers are seeking a **user-friendly, concise, and actionable guide** that balances **technical instructions** with **pedagogical strategies**, while offering **concrete examples of successful implementation** in real classroom settings.

Recommendations and Key Findings

Considering the feedback collected from the survey responses, there are several key aspects the Eco360 partnership should continue to address while finalising the Introductory Guide and the subsequent development of training materials and lesson plan scenarios. These findings highlight essential elements that will encourage the effective implementation of 360-degree video technology and sustainability education in schools.

1. **Develop Practical, Ready-to-Use Resources**: Many teachers requested step-by-step instructions, ready-made lesson plans, and practical examples that they can implement with minimal preparation. Eco360 is designed to have modular pedagogical training materials and lesson plan scenarios, which will be later developed in WP2, which will directly address this need. However, it is important that these resources, as requested by the respondents, are user-friendly, and easily accessible content, designed to support immediate classroom application and reduce teachers' preparation time.

2. **Emphasise Clear Step-by-Step Guidance for 360-Degree Video:** The need for detailed, user-friendly instructions on how to integrate 360-degree video technology into teaching was a dominant theme. Teachers indicated that clear, structured guidance (particularly for those with limited technical experience) is essential. Therefore, the Guide should provide simple explanations, practical tutorials, and illustrative examples demonstrating how to use 360-degree video tools for lesson delivery.

3. **Provide Suggestions of Free Tools and Apps:** Many respondents highlighted the importance of having a suggestion of free, reliable tools and applications to create and use 360-degree video content. Including such lists in the Guide will help lower barriers to adoption by making it easier for teachers to find and integrate these resources without extensive research.

4. **Strengthen Links to STEM/STEAM Education:** There was significant interest in connecting sustainability education with STEM/STEAM subjects. The Guide should offer interdisciplinary lesson ideas and project suggestions that demonstrate how sustainability concepts can enhance STEM/STEAM learning. Real-world examples, such as renewable energy projects or biodiversity studies, should be used to make these connections tangible and relevant for students.

5. **Address Equipment and Funding Challenges:** A key barrier remains the lack of access to VR headsets and 360-degree cameras. While the Guide cannot provide equipment, it should recommend affordable alternatives, such as low-cost VR options (e.g., Google Cardboard).

6. **Include Practical Examples and Case Studies:** Teachers emphasised the value of real-life examples and proven practices to better understand how to apply 360-degree video and sustainability concepts in their classrooms. The Guide will feature a dedicated section presenting examples of best practices where 360-degree video has been successfully integrated into educational contexts. These examples will demonstrate the practical potential of immersive technology, offering inspiration and concrete models that educators can adapt to their own lessons.

By integrating this feedback into the Introductory Guide - along with the upcoming modular training materials and lesson plan scenarios - the Eco360 project will be better positioned to meet the practical needs of educators, encourage the adoption of immersive technology, and support effective sustainability and STEAM education in diverse classroom settings.

Conclusion

The Eco360 Survey Analysis Report highlights educators' enthusiasm for integrating sustainability and immersive technologies into their teaching. While most participants have limited experience with 360-degree video or VR, there is clear interest in exploring these tools to enhance student engagement and learning outcomes.

However, barriers remain. Teachers face challenges such as packed curricula, lack of time, limited access to equipment, and the need for more engaging, ready-made resources. Professional development and institutional support are also key factors in enabling the successful implementation of sustainability and immersive education.

The findings from this survey will directly inform the development of the Eco360 project's outputs. They underscore the need for practical, step-by-step guides, curated tools, ready-made lesson plans, and interdisciplinary connections to STEM/STEAM subjects.

Addressing these needs will support educators in delivering effective, immersive sustainability education across diverse classroom contexts.

Eco360

Co-funded by the European Union

All content is under CC BY-NC-SA 4.0

ECO360 is funded by the European Union. However, the views and opinions expressed are solely those of the author(s) and do not necessarily reflect those of the European Union or the Nationalen Agentur im Pädagogischen Austauschdienst. Neither the European Union nor the granting authority can be held responsible.

Project code: 2024-1-DE03-KA220-SCH-000256179

MIND gGmbH Mittelhessisches Institut für Nachhaltigkeit und Diversität

GoINNO

Innovation Hive

T.T

PUTEVI EDUKACIJE