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## 1. Introduction

The primary objective of the DESIRE project is to identify how new project results of methods and practices in STEM education can reach teachers and schools more efficiently. The online discussion events (ODE) of DESIRE are used to facilitate the sharing of experiences between stakeholders in science and math education. The ODEs has the purpose of collecting qualitative material for the DESIRE Project.

This report is a summary of the sixth teacher Online Discussion Event which took place in the period 21 October to 29 November 2013, on the context of a Community of Practice (CoP) of the inGenious project.

During the 6 week event teachers were invited to discuss 6 different threads under the overall subject “Give your opinion!” which refers to the aim of the ODE to have teachers’ opinion on the recommendations reviled in the Reach Out Toolkit. The following sections contain summaries of the discussed themes from the six week and the outcome of the discussions.

Direct link to the CoP (Log- in needed): <http://www.ingenious-science.eu/web/cop15/home>

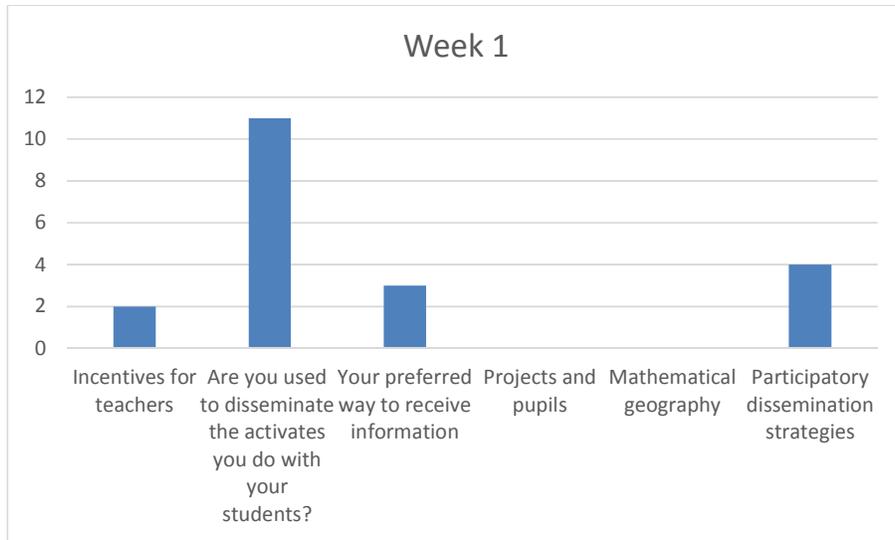
Subject	Thread	Posts	Views
<b>Give your opinion!</b> You are invited to tell us what your opinion is on our recommendations to improve communication to teachers in STEM projects	Incentives for teachers	24	169
	Are you used to disseminate the activates you do with your students?	60	315
	Your preferred way to receive information	5	19
	Projects and pupils	1	9
	Mathematical geography	10	65
	Participatory dissemination strategies	21	135

Table 1: Overview of subjects and threads of the CoP

## 1. Statistical Analysis

### 1.1. Week 1

The first week, only four threads were set up. The most popular thread was the theme “Your preferred way to receive information”.

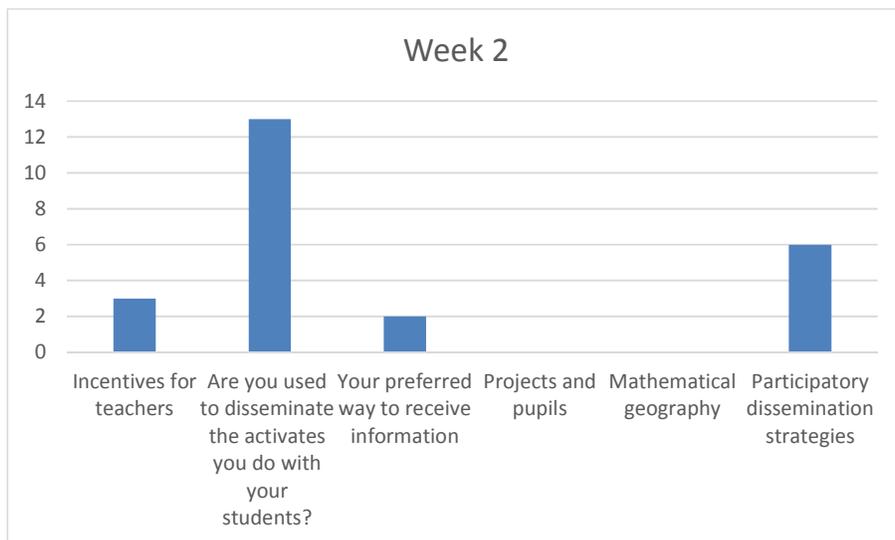


Graph 1: Amount of post pr. thread, 1<sup>st</sup> week

The less popular thread was “Incentives for teachers”, integrated on the subject Research. The first week, the total number of posts was 20.

## 1.2. Week 2

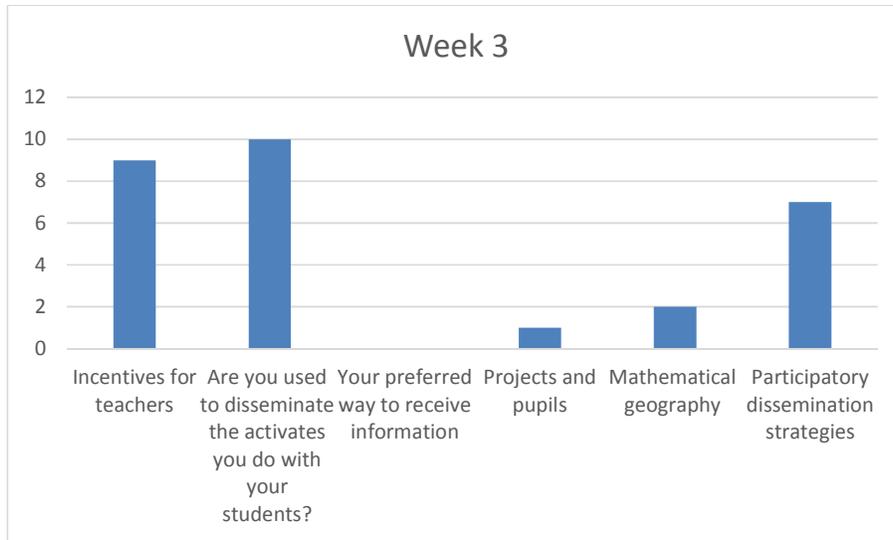
Participation was higher during the second week, with a total amount of 24 posts in the forum. The most popular thread was still the theme “Your preferred way to receive information”.



Graph 2: Amount of post pr. thread, 2<sup>nd</sup> week

### 1.3. Week 3

The third week participation was a bit higher with 29 posts. The most popular thread was still “Your preferred way to receive information”, while also “Incentives for teachers” got much more attention.

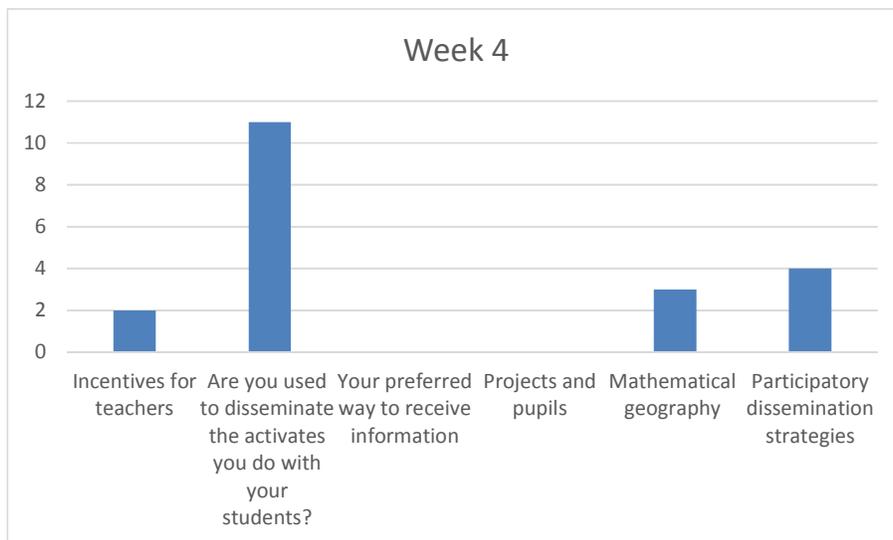


Graph 3: Amount of post pr. thread, 3<sup>rd</sup> week

Two news threads were started that, but with low participation.

### 1.4. Week 4

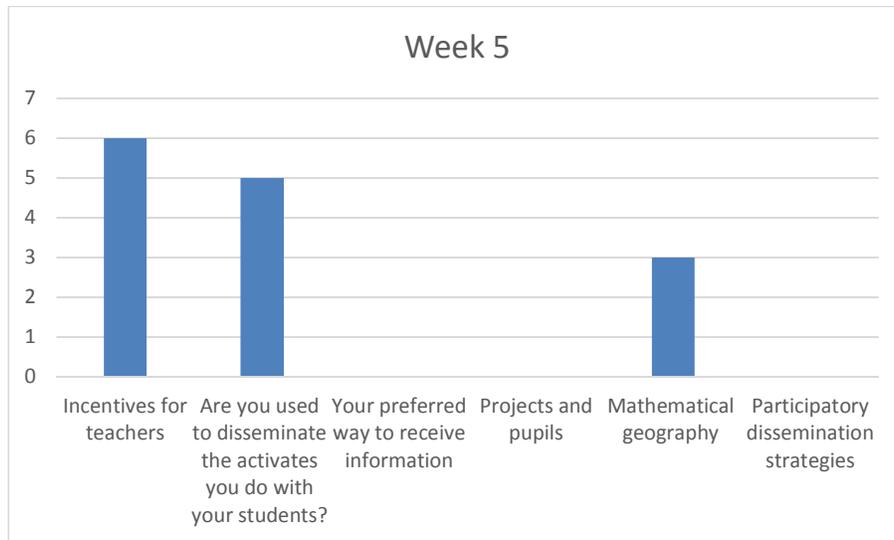
During the fourth week participation decreased again and reached 20 posts.



Graph 4: Y Amount of post pr. thread, 4<sup>th</sup> week

### 1.5. Week 5

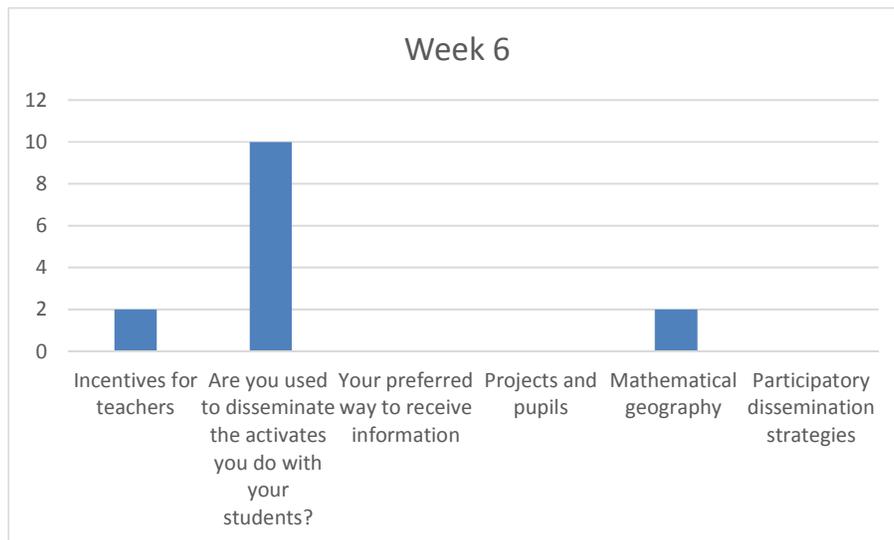
The 5th week participation decrease to 14 posts. The most popular post was “Incentives for teachers” that had 6 posts this week.



Graph 5: Amount of post pr. thread, 5<sup>th</sup> week

### 1.6. Week 6

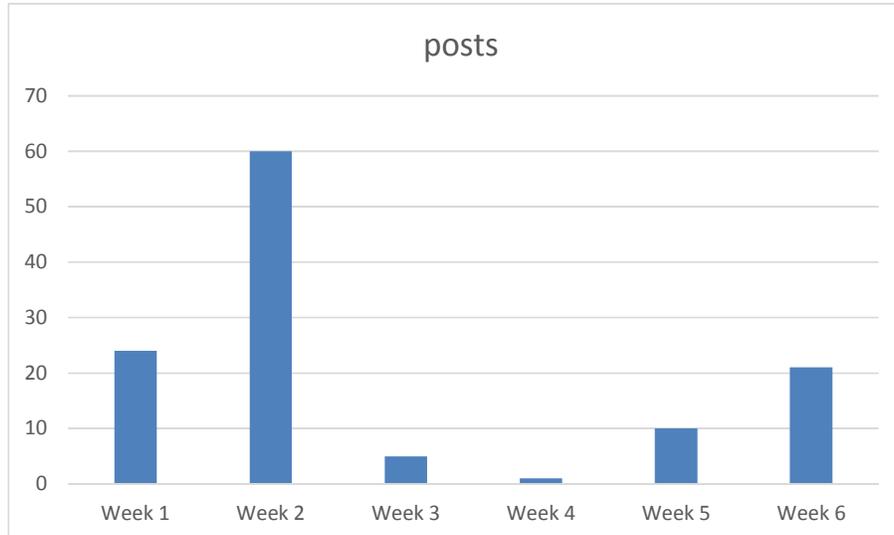
The last week of the ODE/COP the participation level was equal to week 5 with 14 posts. Still the thread ‘Your preferred way to receive information’ was the most popular.



Graph 6: Amount of post pr. thread, 6<sup>th</sup> week

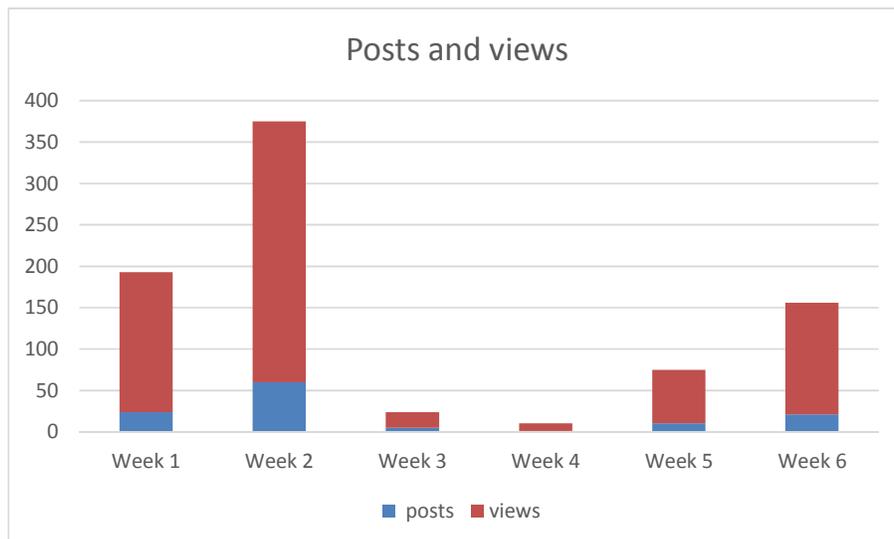
## 2. Comments

When comparing the amount of posts pr. week, we can see that participation was not constant and it was highest on the second week with a total of 60 posts.



Graph 7: Total amount of posts pr. week

The number of silent views was numerous 712, if compared to the number of posts that reached 121. It shows that the event had great interest from teachers but that they lack in taking active participation.



Graph 8: Total amount of silent views pr. subject

However, we have to mention that those teachers, who participated and wrote posts on the several threads, provided very fruitful opinions and information relevant to each of the subjects.

### 3. ODE summary

A few selected recommendations of the DESIRE Reach Out Toolkit was discussed with the teachers in the 6th Teacher Online Discussion Event. In the following a summary of the feedback teachers given by teachers.

#### 3.1. Incentives for teachers

In this thread the following recommendation proposed in the Reach Out Toolkit was discussed: ***“To make sure new STEM education resources are used by teachers, project leader should use incentives to engage and encourage them.”***

It was furthermore proposed in the toolkit that ***“The incentives can be equipment for the school, training, social and institutional recognition for the individual teacher, opportunities to participate in workshops, financial support, reward systems for active teachers, showing success stories on online portals, or international partnerships in funded projects”***

To this statements teachers mentioned the incentives that has made them participate in European and national STEM projects.

Many teachers emphasised the impact new and innovative actives, practices and methods have on the quality of their lessons and the effect this has on their students’ motivation. E.g. one teacher stated that participating in European projects *“also motivates students to know they participate in an international project.”*, while another teacher stated that *“the most incentive for me will be if students would enjoy the entire project”*. A third teacher confirms that indeed integrating new teaching practices that increases students motivation brings value to her work: *“it is a great satisfaction when students get awards at various competitions.”*

A large amount of teachers mentioned that they also find incentives in becoming part of a community where they can find and share inspiring knowledge and experiences. Below four quotes expressing this statement has been selected:

*“Taking part in international workshops and events, furthermore, give me the opportunity to share ideas with other colleagues who already tested the same practices in their classes. I think this add great value, because it helps in selecting quality materials from the web, as often you don't know if they can be really useful with your students.”*

and

*“the chance to meet a lot of European STEM teachers, exchange information, practices, worries and fears was one of the best achievements of the project.”*

Financial incentives are mentioned a few times but not as often as expected:

E.g. one teacher states that it is not a real motivation factor *“For me developing a new teaching subject which will be a success is more an incentive than a financial reward which I in any case will not get.”*

While another teacher states that financial support is an incentive for teachers: *“I think that for many teachers also real prizes or financial supports are good incentives.”*

An alternative incentive mentioned by one teacher is time. Meaning that if teachers were specific time available to participate in projects and gain new knowledge, they would: *“Significant incentive I ask is time, time to search for further enrichment and joint work to other students in my city and elsewhere.”*

Another issue discussed in this thread was how project managers of STEM projects can motivate not only the already very motivated teachers to participate in STEM projects, but also create incentives for the teachers that tempt to find project participation less interesting.

Teachers had very different solutions to this statement. One teacher suggested that *“a [European] common policy in terms of teacher career”* would *“give them some credit when they participate on the projects that improve their skills and the results of their students!”*

Another teacher disagreed with this statement and proposed that it is not a lack of incentives but a lack of language skills: *“I would say that the way to improve participation of teachers in projects is not the same in all countries... and, inside the same country, it is not the same in all schools.”* and *“Thinking about my colleagues, for instance, I see that the biggest problem is the language. Most of them don't feel confident with English”*. The same teacher suggested more coaching and shadowing activities among colleagues to improve teaching skills in schools: *“I think that the easiest and more effective way is to involve other teachers by coaching approaches! One experienced teacher can involve other “learner” colleagues with training courses, job shadowing and sharing validated practices...”*

Finally it was also said that creating teacher motivation is also something that can be consciously prioritised and promoted by upper levels and this way ensuring higher motivation among teachers: *“Furthermore, I think that also headmasters can have a great influence in attracting teachers in new projects, by giving them chances of flexible timetables and considering their involvement in projects as a chance for all school growth.”*

### 3.2. Are you used to disseminate the activities you do with your students?

In this thread the following recommendation proposed in the Reach Out Toolkit was discussed: **“Make teachers actors of the dissemination, involve local institution, and use a decentralised model”**

Teachers were invited to share information about their habits and tell if they disseminate successful activities they have done to teacher colleagues.

The teachers' comments show how teachers all over Europe share and interact very differently from school to school. In most cases teachers do share experiences. First of all many teachers explain that they are already used to sharing good practices between colleagues:

*“we usually have the meetings of teachers teaching the same subjects at the same school and we exchange these materials”*

and

*“we exchange ideas and give resources to each other. I know it’s not like that in all the schools, so I consider I’m lucky to have great colleagues.”*

The sharing of good practice at school level seems to be common among schools in Europe. One teacher mentioned that their colleague collaboration is so close that most STEM activities are created in close collaboration between all STEM teachers:

*“In my department we prepare all of the materials together. If we do not have time to prepare together it is very common to share the materials, notes, homeworks and activities.”*

The sharing of practices between colleagues is not always possible some schools might be too small while others simply don’t have a structure that gives space for sharing practices:

*“I am a secondary school teacher of chemistry. We used to be a bigger school and we had more teachers of my subject several years ago. We used to disseminate the interesting activities and good ideas between us - we spoke about them and showed them. I am the only chemistry teacher in my school now.”* In this case the chemistry teacher therefore needed to find new ways of gaining knowledge: *“Good source of new activities for me are meeting of teachers from different schools at the Methodology and Pedagogy Center.”*

Some teachers also mentioned that they have access to regional networks where it is possible to exchange and disseminate knowledge and practices:

*“We only share during meetings but the collaboration with teacher is really close so it works perfectly. We also have a Club of Modern Teachers in every region in Slovakia so we inform these teachers about our activities and good practices at this event.”*

and

*“Here in Stockholm we have a web site [www.pedagogstockholm.se](http://www.pedagogstockholm.se) were teachers (and others who are connected to public/private schools) share good work.”*

Some national level events were also mentioned as a place that gives rise to exchanging experiences and knowledge between teachers:

*“Also when we have training sessions held at the state level - usually in Skopje (the capital of my country - Macedonia) I turned to my colleagues from Macedonia and despite being the subject of training we exchange our experiences of working with students.”*

Additionally teachers mentioned different ICT and social media tools they use to share and disseminating practices:

*“Social networks are great tool to disseminate activities. I share my activities via a group that i’ve created in What’sAPP.”*

*“Recently, I found it better for me to post the finished product of the students in the school portal or on YouTube if it fits. Then I send the link to teachers that I think might be interested. This way I get curious and more interested. Teachers and others ask me questions that let me tell.”*

and

*"In my school we have a social network that is called "schooly"". "Also all school teachers' mainly STEM teachers can participate in this network."*

But despite all the good examples mentioned of forums and networks where teachers can share and disseminate it is still not something that teachers can take for granted. Despite all the great examples still some teachers do not work in a work environments where sharing is a common practice:

*"Everybody are so busy that we do not have time to follow each other's lessons. It's a shame."*

Also despite the different opportunities the teachers have to share, teachers still mentioned that their colleagues not always have time and are not always are interested.

*"in my experience sometimes it is a good idea also try to push colleagues in doing new things. Once you have started in sharing, then it becomes easier also for the others asking more."*

Some teachers have tried to overcome the problem of lack of interest in new ideas by focusing on creating a culture of interest in sharing and learning that concerns the school as a whole:

*"I find that the main difficulty or dilemma is how to make colleagues feel part of the project, which requires a considerable investment of time and attention. I find that sharing all, colleagues, students and also head master in planning and implementation is a model for success."*

and

*"I agree with all of you that it is very important involving many subjects in dissemination: not only teachers and students, but headmasters, too. I would add that also families are an important part of the whole dissemination process, because many times a good reference can spread some news about a project, a resource or a research better than an academics article!"*

Another theme that came up during this discussion was the incitements teachers have for sharing and disseminating good practices to other teachers:

One teacher mentioned that it is important to share because: *"Sharing ideas always bring good results!"* while another teacher found it to be an essential responsibility to introduce younger teachers in good teaching practices *"I like to share activities with my colleagues due to the fact that half of the staff are young teachers that need guidance."*

And finally one teacher mentioned that her incitement for sharing is having information from others teachers because teachers are reliable source of information on useful teaching materials, which is why teachers should share knowledge with colleagues: *"there are many good places where finding good resources, but what I like the most is when I have some feedback from teachers who already validated them"*

### 3.3. Your preferred way to receive information

The recommendation discussed in this threat was if ***"STEM education practices should be presented and communicated to teachers in a relevant and effective way because teachers have stated they don't have much time"*** and additionally that ***"The time that a teacher wastes just looking for the materials for class is an enormous waste of resources."***

The responds to this statement largely confirms this and one teacher added that that even *“too much information can be more confusing than no information”*. But teachers till emphasised the importance of taking their time to look for information because as one teacher formulates it *“I think it makes my teaching better”*.

### 3.4. Projects and pupils

This threat was not a discussion but a teacher comment posted in the wrong place.

### 3.5. Participatory dissemination strategies

In this threat the following recommendation proposed in the Reach Out Toolkit was discussed: ***“A dissemination strategy should be participatory and involve teachers that can contribute with their knowledge of the field. This will ensure the STEM resources and methods are oriented towards teachers’ needs and take their constraints (classroom situation, the school structure or the curricula) into account.”***

To this statement teachers responded that teacher communities are important because teachers communicate well between teachers, they easily identify what works and what does not work and which teaching methods are relevant and easy to adapt and actually improve students’ results:

*“Teachers should be involved in dissemination of activates among STEM teachers.. it will make them take more responsibility to their teaching and to their community. Making them active users.”*

and

*“Teachers that are part of a community and share experience are stronger teachers.”*

One teacher expressed that he feels STEM teachers often are left alone with their objectives and therefore easily fell like a *“lonely wolf”* but that the teacher communities help create better dialog and cohesion in the field so teachers feel less alone.

Another teacher mentioned the projects inGenious and Scientix as good examples of teacher communities that gives space for *“dissemination of good STEM practices, both are accessible to teachers, both facilitate the life of teachers, sharing best practices and “ready to use” classes...”*

### 3.6. Mathematical geography

A teacher shared and disseminated his experiences and teaching materials in Mathematical Geography.

### 3.7. Conclusion

The number of silent views was 712 while the number of posts reached 121. It shows that the event had great interest from teachers but that they lack in taking active participation.

In relation to the teachers' feedback to the recommendations of the Reach Out Toolkit, four recommendations were discussed.

The teachers' feedback on recommendations that states that ***“to make sure new STEM education resources are used by teachers, project leader should use incentives to engage and encourage them.”***

The incentive that teachers mentioned the most was to gain access to new and innovative activities, practices and methods that have a positive impact on the quality of their lessons. Also a large amount of teachers mentioned that they also find incentive in becoming part of a community where they can find and share inspiring knowledge and experiences.

In relation to the listed teacher incentives in the Reach Out toolkit one incentive mentioned was *“showing success stories on online portals”* to this it can be added that project leaders can focus on communicating the benefits and effectiveness of using the project's innovative teaching resources in practise since it is something teachers find motivating.

Financial incentives were mentioned but as a central incentive, it was listed as a central factor in the Reach Out Toolkit recommendations.

Finally the Reach out toolkit also mentions that motivation can be consciously prioritised and promoted by *“upper levels and this way ensuring higher motivation among teachers”*. This incentive was confirmed by teachers. For example one teacher suggested that it would increase participation if *“a [European] common policy in terms of teacher career”* would *“give them (teachers) some credit when they participate on the projects that improve their skills and the results of their students!”*, while another teacher mentioned that this can be done by including also headmasters which can make sure teachers have the right conditions to be able to involve in projects.

**Secondly, the teachers' feedback on the recommendations that *“Make teachers actors of the dissemination, involve local institution, and use a decentralised model”***

The teachers' comments shows that in most cases teachers do share experiences. First of all many teachers explain that they are already used to sharing good practices between colleagues. The sharing of good practice at school level seems to be common among schools in Europe. But the sharing of practices between colleagues is not always possible some schools might be too small to spread knowledge effectively while others simply don't have a structure that gives space for sharing practices.

Some teachers also mention that they have access to regional and national networks where it is possible to exchange and disseminate knowledge and practices. Additionally teachers mentions that different ICT and social media tools that they use to share and disseminating practices.

This shows that our recommendation on making teachers actors of dissemination activates, is relevant since teachers share and very often have access to local, regional and national networks.

**Regarding the recommendation *“STEM education practices should be presented and communicated to teachers in a relevant and effective way because teachers have stated they don't have much time”*** the teacher responds all confirm this statement without any further details or shades.

For the recommendation ***“A dissemination strategy should be participatory and involve teachers that can contribute with their knowledge of the field”*** teachers responded that teacher communities are important because teachers communicate well between teachers, they easily identify what works and what does not work and which teaching methods are relevant and easy to adapt to actually improve students’ results: