

## 6. Theme, sub-themes and comments: Interaction within lessons

The thematic analysis of the theme, sub-themes and comments of 'interaction within lessons' by learners, from teachers' viewpoints, when addressing the question 'how does the integration of virtual reality simulations influence primary school teachers' classroom practices', during the study of the influence of VR as an educational tool on teachers' pedagogy.

Pseudonyms were used instead of participants' names

Table 1 is a summary of the theme, the 'interaction within lessons', indicating the sub-themes, the number of participants who commented and the number of comments identified for each of the sub-themes, which are demonstrated in Tables 2 to 6 below.

**Table 1: Indicates the theme and sub-themes number of comments and participants which refer to reaction to learning**

Theme	Subthemes	Participants	Comments
Interaction within lessons	The learning experience - Experiential learning	8	41
	Active learning	5	10
	Focused on task	4	8
	Motivate learning	4	4
	Immersive learning	3	4

**Table 2: Indicates the sub-theme 'The learning experience - Experiential learning', under the theme: 'Reaction to learning - feeling real'**

All eight participants, with forty-one comments identified.

	The Learning experience - Experiential learning
Participant pseudonym	Comment
Bhavna	Fortunately, I have a very big classroom. So we utilized almost the entire classroom when we did the VR
Bhavna	I do think integrating VR into lessons is useful. I used VR headsets last year. I haven't used them much now due to COVID, we were online. I used VR headsets a lot, especially in the fourth term every other lesson, when we explored space, which was great.

Bhavna	I give them more, um, yeah, visual aids, no, on the projector. And then we use the VR quite extensively where we spoke about planet earth and I'm like, right, go onto this link. And we're going to now explore planet earth. And we did that. We explored satin, we explored the asteroid belt and I found in my exam, uh, it was last year and the year. No, not the year before the previous year. Uh, where, when I did that, I saw in the answers what they remembered from the VR experience and, you know, they, which is so nice to see and they actually remembered it more. Um, so the VR really helped in that sense with, I find personally, if kids can see something and then they, so I give them information, they see that physically, they actually gels. Well, they meant they still remember it.
Bhavna	I try to do more learner centered teaching where I, so what I do in a lesson is I teach a topic and I see how the kids are reacting to that particular topic.
Bhavna	it can create or help to create the reality or an understanding of the reality
Bhavna	Not so much special needs, but we have learning with difficulties with grasping concepts. , but we have a few learners, um, who have some learning needs. But with VR it really helps, as it is visual, and it is practical So some of them, I have to take a little bit more time, going throughout the unit to explain to them [inaudible] [00:11:00] such as the science stuff, they would talk about it or create a drawing as opposed to writing down things. So if we do have kids with learning needs, because we do so much of discussion in terms of school and exposing them to outside experience it benefits these kids. So I have these kids, I haven't had to adjust my teaching style drastically as I consider them when I am planning.
Bhavna	the VR really helped in that sense with, I find personally, if kids can see something and then they understand it more, so I give them information such as VR
Bhavna	So we did, we did the Mars exploration.  It was phenomenal. I did it myself. And we did like, luckily I very big enough classroom and it was, the kids took a video because I was like just walking all over and we had fun with it. But then they remembered that when they did their project, they had to build their own Rover that will go on any, um, um, planet. And, uh, they remember that VR that we did and they used some of those ideas, what we saw into their little, uh, robots, that table. So that was quite cool
Bhavna	Well, some of them have never had never, ever done a VR experience. So it was, it was so nice and like heartwarming to see some of them they're like totally, totally fascinated. Like they, they actually felt that they were on that particular planet. You know, when we are doing that or even the moonwalk when we are doing they're like, this is really, I feel like I'm on the moon of, I guess that is the VR experience. You feel that you actually in that specific place.
Dhriti	How did it relate to what you are teaching now?  Speaker 1: Perfectly, absolutely related perfectly because it's, uh, aligned [00:00:30] with the san and the whole reason that we said we, um, actually teach them about the san. I feel is to show them how um, how they should learn about respecting the environment, and of being grateful for what we have, things like that. So it definitely is very much aligned with not just their knowledge, but also the skills and values that we'd like to teach them as well. So, loved it.
Dhriti	I think whenever things are put within a context, there's always much more effective learning that takes
Dhriti	it was very immersive

Kgomotso	And they actually said they felt as if they were part of what was happening. So it was like part of them. So, they really were engaged in the learning
Kgomotso	They were excited about it, so they participated even better.
Kgomotso	And from the feedback, they understood the content, because they were really immersed in it, as they had no other disturbance, They found the headphones useful when listening to the video and watching it in VR
Kgomotso	one child was focusing on what they were doing at that particular moment, so they gained a lot of information.
Kgomotso	When teaching when information is within the lesson content, helps children to understand
Kgomotso	I think it's played a very important role, because from the experience I got from my learners, the feedback was great.
Mary	And that experience means that they safe, that it isn't expensive, but at the same time, they get that feeling that they are traveling and moving and exploring new places. So they get excited, they engage and participate.
Mary	The virtual experience in this day and age actually can assist or can supplement when you can't go out.
Mary	they get that feeling that they are traveling and moving and exploring new places. So they get excited, they engage and participate.
Mary	It was an out of body experience because they could look down.
Mary	And he insisted he wanted to . . . absolutely loved it because this was like a real thing for him, you know, he could relate to it. So I just want to go into space again,
Mary	And that VR experience means that they safe, that it isn't expensive, but at the same time, they get that feeling that they are traveling and moving and exploring new places
Mary	but I was surprised because they enjoyed the experience even though they've flown in airplanes and have some knowledge.
Mary	Mentioned another VR with Grade 7, researcher asked: do you think it's still interesting to Grade seven? Speaker 2 : Actually, I was amazed because it did, but they sort of, um, maybe they were just tired and they enjoy,
Mary	explore natural science and social science issues further and apply to the real world, using the UN sustainable goals, development goals
Mary	I know I use the, when we did Egypt, then we went into the caves, you know, I said, we're going to Egypt,

Mary	I think it does have, because if you had to take, so you doing geography and you're doing rock formations and you find an example, to explain to the children would make much more sense.
Mary	So I think they enjoy being surrounded by the experience immediately and sort of it a live way.
Mary	the children learn through the through experience, whatever the experience might be. So actually that's how, that's why I liked the VR,
mary	Using VR: Yeah. And I know when I've used VR, when we did Egypt, then we went into the caves, you know, I said, "we're going to Egypt, Did you tell your parents? and now we can go to Egypt, so now we can. Cause we can take them "out" that sort of the idea, on a "road trip" for doing it that way,
Saiba	Children related positively where engaged  Children very excited. Keen to go through the content. Many children spoke about how the VR made them feel as if they were in the place, in Borneo, spoke about how beautiful it looked - helped them understand ecosystems
Sarah	Well, I think because it's real, it's reality. It's another reality. It's not, um, it's something that they're using their senses and they're engaging with on, on like on every level, you know, like I with that's the first time I've ever had a headset on. And I mean, you're completely immersed in that and you, and you guiding you looking at your own where you want to look, where you want to go, you, you aware of your own body in, in the, in the experience. So it's back to experiential learning as opposed to, um, I don't know, not, it's not even tactile learning when you get a worksheet. Yeah. You know, it's superficial for me.
Sarah	So how did your class react?  They loved it. They absolutely loved it. In fact, I started them off on plants. If I remember correctly, adaptations of plants. So virtual reality of a plant and they saw the different plants and they did the activities. And then they went on and did their own. So they went on their own explorations of, of things that were of interest to them in augmented reality. So my little boy who was interested in dinosaurs, so they even took it outside and they were like, what? There's this dinosaur have a playground. And they walked around and they enlarged it and they reduced it. And so he came alive. Then he could then share his knowledge, you know? And then another kid loved the sharks. So they went, you know, he and his friends went and did that and they were like, wow, there's a shark in, in the classroom. So it, it definitely does, um, connect, reconnect kids with a learning material.
Tammy	And I think, um, they don't have enough hands-on experience and things, and I think that's a nice substitute for actually being able to see things [00:02:30] I don't know how it could be incorporated in all the subjects . So do this effectively I think we need training, specifically of how we could incorporate it into lessons,

Tammy	<p>Okay. But I think from, uh, like little Jeremy, the one child in grade six, he said to me afterwards, he said, I know how to use his virtual reality glasses. And I got to see all of the different places, u, he went from the beach, he went to, to the forest or the jungle. He went here and he went there he saw everything and it was so interesting.</p> <p>So I think children that you lose in a classroom, those that I don;t know, they drift off or they perhaps get bored, those are the sorts of children that you really get with this.</p> <p>I think it was very enjoyable, very nice. I think it is very important and nice for them to see that type of things they way they did, and that those are the sorts of children that you really want them to engage.</p> <p>Back to your point, there is another little boy who is very quiet in the classroom. He had a lot to say after putting on the goggles. and seeing the different things, which is nice. especially. to see something which is beneficial</p>
Thandiwe	Thank you Karen, for introducing me to VR and allowing my children to use it, because the excitement and the feedback I got were great. They were very excited and like it.
Thandiwe	<p>I know that, I remember that we were doing cyberbullying and I had watched the video myself before would watch. So I wanted to know, find out how, and I had taught, uh, bullying before I had taught them about cyberbullying, but it was interesting for me to learn that most of them said it was much more like, so, and I often now they could not understand what really cyberbullying was about. The VR video helped them understand what cyberbullying was Cause with that, I had discussed all the different types of bullying, we had discussed cyberbullying, but, uh, I thought they understood, but clearly or apparently, they didn't really quite understand it because I don't know, maybe for us, the social media things and, and phones and things like that. Maybe they're not so used to it, but now it is clear to them. This is, oh, so this is what side of the things about it's about text and sending a message to someone could be someone you know or someone, um knowingly or what.</p>

**Table 3: Indicates the sub-theme 'Active learning', under the theme: 'Reaction to learning - feeling real'**

Five participants, with ten comments identified.

	<b>Active learning</b>
<b>Participant pseudonym</b>	<b>Comment</b>
Bhavna	I try to do more learner centered teaching where I, so what I do in a lesson is I teach a topic and I see how the kids are reacting to that particular topic. And if I see, you know, some of them drifting off and up in, I, I try and change it to engage them. And then that's where my VR lessons come into play. And I've noticed that they thoroughly, thoroughly enjoy it. You know, they, they absolutely enjoy it

Bhavna	<p>So as the teacher you know the content, and what page they are using in the textbook, so what I do is I have them have the textbooks open [00:08:07] We have a general discussion. I link it to the VR and the textbook information. And I find this much better, the kids ask a lot of questions. uh, based on the discussion that we have. And I just find it, um And I just find it, um, that just needs to be more approachable generally, than specifically standing behind the table and saying, okay guys, and we'll draw the board. I prefer the discussion and getting the children engaged and involved. [00:08:30] So that's my teaching styles that I like to be involved with them in having a discussion. I have, sometimes I'm making them close their eyes and see the pictures and I find that if you make them visualize and see, I see this come back when they are doing assessments. [inaudible] They do really well and recall the information. That is what I do, we have discussions and have a lot of Q and A and they discuss the topic.</p>
Bhavna	<p>the VR really helped in that sense with, I find personally, if kids can see something and then they understand it more, so I give them information such as VR</p>
Bhavna	<p>Well, some of them have never had never, ever done a VR experience. So it was, it was so nice and like heartwarming to see some of them they're like totally, totally fascinated. Like they, they actually felt that they were on that particular planet. You know, when we are doing that or even the moonwalk when we are doing they're like, this is really, I feel like I'm on the moon of, I guess that is the VR experience. You feel that you actually in that specific place.</p>
Dhriti	<p>They definitely, obviously it has to be a briefing at the beginning, let them watch it and definitely a debriefing just to help them understand what exactly it is.</p>
Kgomotso	<p>How do you feel about how the lesson played out with the inclusion of VR in the lesson? Learners loved it, were so excited, and loved the way they engaged, wanted to know if they could do more with the VR Wanted to continue using the technology What do you think the learners gained from today</p>
Kgomotso	<p>Okay. I noticed that my learners were excited and they were motivated, and they were focused. So I really loved it.</p> <p>They were excited about it, so they participated even better. And from the feedback, they understood the content, because they were really immersed in it, as they had no other disturbance, because one child was focusing on what they were doing at that particular moment, so they gained a lot of information.u feel t</p>
Tammy	<p>How did feel the inclusion of VR content impacted the learners participation in the lesson and / or their understanding of the content? If yes, please explain how arrived at that conclusion.</p> <p>Yes it did impact on the learners, even those who said they had similar technology at home. They were engaged, and enjoyed the VR, they wanted to explain what they had seen and had many questions about the lesson content, more questions that I normally find they ask</p>
Tammy	<p>they don't have enough hands-on experience and things, and I think that's a nice substitute for actually being able to see things</p>
Thandiwe	<p>Yeah, there was, there was so much excitement. There was so much excitement and, um, because we were doing it in turns. So the others in class were also looking forward to doing it, having their turn off, as we were rotating them doing that.</p>

**Table 4: Indicates the sub-theme 'Focused on task', under the theme: 'Reaction to learning - feeling real'**

Five participants, with eight comments identified.

	<b>Focused on task</b>
<b>Participant pseudonym</b>	<b>Comment</b>
Bhavna	The VR videos take the kids [00:09:30] well beyond the topics that we are exploring.. I put a list on the board of the videos they can explore in VR. I use quite a lot of Youtube, as I feel it is accessible. um, and we use expeditions as well, when I first started using Vr. So I put the topics on the board that I want them to look at, and I say to them choose one of them and go with it. And then I just sit back and watch them. Because they are all over the place. Moving around.
Bhavna	Well, some of them have never had never, ever done a VR experience. So it was, it was so nice and like heartwarming to see some of them they're like totally, totally fascinated. Like they, they actually felt that they were on that particular planet. You know, when we are doing that or even the moonwalk when we are doing they're like, this is really, I feel like I'm on the moon of, I guess that is the VR experience. You feel that you actually in that specific place.
Dhriti	Would you consider using VR in your lessons? Absolutely. The learners were so involved and interested. They used it individually, but it reinforced what they were doing in the other activities.
Kgomotso	Are there other benefits of using VR in your lessons? Speaker: You can't stop them from looking at each other. But when they were using the VR, the goggles, there was no such thing like disturbance. Every learner was focused on what they were doing. So, yes.
Kgomotso	Did you find that learners were more engaged, or more easily distracted using the technology? They (the learners) were more engaged. It is something that they were using for the first time, so because of the excitement, they were more engaged.
Sarah	So how did your class react? They loved it [VR]. They absolutely loved it. In fact, I started them off on plants. If I remember correctly, adaptations of plants. So VR of a plant and they saw the different plants and they did the activities. And then they went on and did their own.
Tammy	Do you think VR technology is worthwhile incorporating again into lessons? Speaker: I do, I think the different technology can be used in lessons for kids to interact. And I think sometimes it's finding the time to include the technology, the school is talking about getting headsets but nothing as yet. Today the children really enjoyed viewing the VR, and it tied in well with the lesson's revision.  And I think that showed you other things, because the little souls who were doing that, I was watching them and lots of them were just not listening to what you were saying. So again, it's the frustration, the instant feedback that they want is this access, but not listening to the instructions. So you seeing all those kinds of things in the lesson as well. And I think it is often like that, but I just actually want to sit and listen, they just want to do, they want to get it on and do it. They are not actually following the instructions.

Tammy	Now, we are focusing on these skills, focusing on those skills and then in our lessons we have to incorporate those skills. So using VR to assist with the skills and the lesson content is useful, another resource.
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**Table 5: Indicates the sub-theme 'Motivate learning', under the theme: 'Reaction to learning - feeling real'**

Four participants, with four comments identified.

	<b>Motivate learning</b>
<b>Participant pseudonym</b>	<b>Comment</b>
Bharvna	I try to do more learner centered teaching where I, so what I do in a lesson is I teach a topic and I see how the kids are reacting to that particular topic. And if I see, you know, some of them drifting off and up in, I, I try and change it to engage them. And then that's where my VR lessons come into play. And I've noticed that they thoroughly, thoroughly enjoy it. You know, they, they absolutely enjoy it
Kgomotso	<p>Okay. I noticed that my learners were excited and they were motivated, and they were focused. So I really loved it.</p> <p>They understood the content much better, because they were not disturbed, and there were self-motivation from their side. So I think they understood the lesson much better than when using other methods.</p>
Mary	I think that you need something to motivate children to excite them, and it will, the virtual experience in this day and age actually can assist or can supplement when you can't go out. If I just take COVID for example, does that mean we can take them on a journey without leaving the classroom? And that experience means that they are safe, that it isn't expensive, but at the same time, they get that feeling that they are travelling and moving and exploring new places. So the get excited, they engage and participate.
Tammy	So I think children you lose in a classroom, those that . . . drift off or are bored. I think it [VR] was very enjoyable, very nice. I think it is very important and nice for them to see that type of thing, and that those are the sorts of children that you really want them to engage, . . . to see something which is beneficial"



**Table 6: Indicates the sub-theme 'Immersive learning', under the theme: 'Reaction to learning - feeling real'**

Three participants, with four comments identified.

	<b>Immersive learning</b>
<b>Participant pseudonym</b>	<b>Comment</b>
Sarah	And I mean, you're completely immersed in that and you, and you guiding you looking at your own where you want to look where you want to go, you, you aware of your own body in, in the, in the experience.
Dhriti	I think the kids thoroughly enjoyed it. I think the kids thoroughly enjoyed it. They definitely, obviously it has to be a briefing at the beginning, let them watch it and definitely a debriefing just to help them understand what exactly it is. So, um, but they loved it. And I think it was very immersive and they were able to come up with information, you know, make comments about it. So it got them thinking
Dhriti	It was very immersive
Bhavna	Well, some of them have never had never, ever done a VR experience. So it was, it was so nice and like heartwarming to see some of them they're like totally, totally fascinated. Like they, they actually felt that they were on that particular planet. You know, when we are doing that or even the moonwalk when we are doing they're like, this is really, I feel like I'm on the moon of, I guess that is the VR experience. You feel that you actually in that specific place.