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Bring Your Own Device or Bring Your Own Distraction

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Abstract

The purpose of this exploratory case study was to investigate the utilisation of bring your own device (BYOD) technologies in the classroom to determine if students and teachers perceive that the use of a digital device increased a learner's access to learning opportunities within the classroom, and, if the use of digital devices increased their motivation to complete learning activities. This case study explores the student and teacher perceptions around these issues. Data collection followed a mixed methods approach with quantitative and qualitative data being collected. A questionnaire was used to collect quantitative responses to questions as well as allowing qualitative data to be collected through student and teacher written responses to these questions as well. The data was collected within classrooms that have had access to personal digital devices for learning for at least a ten week period to ensure a basic proficiency with digital devices and their use in a classroom environment. The results of the study showed that students and teachers perceive there is a correlation between the use of digital devices and increased motivation towards a task as well as increased access to learning tasks. Students hold a more positive view of the use of digital devices overall than teachers but both clearly acknowledge the usefulness of digital devices particularly in making tasks easier through ease of access to online information, and through learning tools and applications that allow students to learn in a variety of ways from a variety of sources. Most participants acknowledge that a digital device brings with it an element of distraction too.

Keywords: Schools; Smartphones; Burden

Introduction

Recent trends in schools encouraging or enforcing the use of personal digital devices such as tablets, laptops and in some case smartphones, is dramatically changing the way students work within a classroom setting and access their learning. The increase in the demand for these options is making schools rethink their infrastructure and hardware investments and in many cases reprioritising from traditional funding areas to ensure digital devices are accessible by the majority of the student population within their schools. In some cases schools are unable to fund the growing need for personal digital devices and are asking students and parents to fund these devices through 'bring your own device' (BYOD) programmes. Although this model allows for the burden to be lessened for the school to provide a device for students to use, there is a growing inequality beginning to grow between the students and schools who are able to support personal devices for students and those that are not, and the possible educational outcomes for these students [1].Although this research study does not endeavour to discuss this issue in depth, it was the beginning point of our thinking around the use of personal digital devices in schools and their impact on students' engagement and learning. Our concern has developed from the perspective that if the use of a personal digital device does increase task engagement and motivation, and does increase access to learning opportunities, then we would argue we have one of the biggest issues of equality of access to education that our system has ever seen.

Literature shows that just having a mobile device in the classroom doesn't automatically bring about enhanced learning outcomes. There is still much debate on the actual utility of mobile devices in educational efforts and in what ways mobile devices enhance learning outcomes and motivational levels of students '[2]. It is hoped that the research findings of this study will inform the scholarship of mobile learning in this regards.

Research Questions

This exploratory study is based around the main theme and title of the project 'Bring Your Own Device or Bring Your Own Distraction'. This theme poses the question of whether bringing your own device enhances or distracts from learning. This leads to the two main questions of the study which are

§ Does a student having his/her own device have a perceived increase in motivation towards learning and learning tasks?

§ Does a student who has his/her own device have a perceived increase in access to learning opportunities?

Literature Review

Bruner's theories of motivation formed the theoretical basis of this study. Bruner averred that motivation as an essential precondition for learning. He particularly emphasized intrinsic motivation. He stressed building learning around students' natural curiosity so as to ensure high levels of intrinsic motivation. This study looks at how mobile devices can influence learning motivation and engagement and learners' access to learning opportunities.

Motivation, Engagement and Pedagogy

Student motivation in the context of this study is defined as the "process whereby goal-directed activity is instigated and sustained" [3]. Although motivation is not a construct in itself that can be observed, actions that display motivation can be. Students who have a higher

level of motivation will be seen to engage in task related activities more often and remain engaged in that task for longer periods of time. Engagement is seen as the act of being involved in the task or on task related activities and is a behaviour that can be observed when students are working within a classroom setting. How to increase learner's motivation within the classroom setting is a topic discussed at many levels of the education system in an endeavour to continually adapt the learning environment to increase student success with learning tasks. Digital devices are seen as a key step in this adaption to better align the learning environment to that of the learner and increase their motivation in learning tasks. Howell [4] suggests that the continual change and adaption of technology itself creates excitement within the classroom and engagement increases in the task is a result of this excitement as "students like technology, they enjoy using technology and students find learning tasks that involve technology more engaging and motivating". This would suggest that motivation could be linked to the tool or device within the setting and not necessarily to the task, and an increase in motivation could be achieved by the introduction of digital devices within the learning context. Trimmel and Bachmann [5] conducted a study within a high school with a group of students who had access to laptops and one that did not. They found that students that used the laptops not only had a higher interest in their learning but also an increase in their motivation. Lam and Tong [6] also found that the use of digital devices in the classrooms was effective in enhancing learning but also quoted from Trimmel and Bachmann's [5] findings that students who had access to the laptops were reported to participate more in the task or activity, be more interested in their learning and more motivated to perform in comparison to the students who did not have access.

Access to Learning

For students who have access to digital devices, much of the literature describes a challenge to the traditional learning roles within the classroom and the potential challenges arising from the increase in need for students to access learning in different ways. With learning more mobile, more accessible and information readily available the locus of control within the classroom is shifting. A study by Vavra and Spencer [7] discussed the use of you tube and how it was utilised within the learning environment. They described how the use of YouTube was a new type of literacy that could be taught to students. They suggested that the teaching of this new literacy brought the relationship between the teacher and the student more closely together as the students felt the teacher was doing their best to meet the future needs of the students. Students realised that the teacher was endeavouring to build their capacity to interact with this type of learning literacy and was better attending to their learning needs. They discuss that the introduction of this type of literacy "connects the classroom and the knowledge within it, to a wider scope of literacy that students will use for the rest of their lives" (p.44), extending their learning beyond what a traditional context could achieve. Stephens [8] findings also discuss the relationship between the teacher and student being enhanced in laptop classrooms and suggested that the use of laptops helped promote a constructivist approach to teaching and learning that promoted feelings of task engagement. It could be argued that a higher level of task engagement would enable access to more or further learning if students participated more or for longer in the learning activity.

Distraction

There is much discussion within education around the possibility of digital devices bringing an unnecessary level of distraction into the learning environment. In a study by Evans [9], 43% of parents who responded concerning the potential benefits of digital devices indicated that they thought that device use increased student engagement in learning. However 76% of the parents, responding to what they felt were their biggest concerns regarding digital devices, felt that students would get distracted from their learning. There were similar findings with teachers who acknowledged the value of digital devices in the classroom, particularly to increase student engagement, however "three quarters are concerned about the potential for these very compelling, interactive devices to distract students from their learning at hand" (p.11).In a paper written by Lam and Tong [6], they acknowledge that the issue of weighing up the potential benefits of digital device use in classrooms, versus the possibility of distraction from learning, is a very complicated issue. They found that the use of digital devices in the classroom had the capability of enhancing engagement and active learning but also acknowledged a relationship between device use and classroom distraction. When used correctly, digital devices supported student learning, however when used for non-class purposes, digital devices could impact or inhibit classroom learning [10,11]. In a study conducted by McCoy [8] students on average used a digital device for activities not related to the learning task 10-11 times per day. There were a variety of reasons for this including boredom, seeking entertainment, or to stay connected with others through email or social media. Tesch et al. [12] conducted a study looking into developing a model for examining classroom distraction and to measure student perceptions on the degree of distraction. They found that external distractors, such as problems with equipment, placed 9th out of a list of 26 possible distractions. However, self-produced distractions, such as playing video games ranked 4th with over a third of participants using their laptops for checking email and surfing the internet during lectures.

Methodology

The research is a mixed methods exploratory case study conducted in two intermediate schools, one on the North shore of Auckland and one in West Auckland in New Zealand. The second school in West Auckland was asked to join the study as the first school was unable to fulfil all of the requirements originally agreed upon. The second school was sought to complete the remaining questionnaires to ensure the sample size of the study was robust. The schools were chosen as they have had a BYOD programme in place for a number of years. students (Years 7 and 8) within these schools use digital devices as part of their normal learning programme and should be able to respond to the posed research questions based on their experiences. The schools have also been chosen as they have the same age group of students and educational quality. The schools were decile nine and ten schools with students of ages from 10 to 12 years (decile in New Zealand schools refers to the socio-economic and not academic ability levels of the schools. Decle ranges from one to ten - lower the decile, poorer the soci-economic status).The students were chosen as they had their own digital device at school and had been using the device within the learning context for at least one term (10 weeks).This was to ensure that the students had a basic literacy in the use of devices within the classroom. Seven teachers and thirty nine students were used for the data collection. This approach is appropriate for this type of research as it is gathering perceptions and opinions of the participants and the

researcher's interpretation of the data is shaped by their own experiences and background [13].

1	**None of the Time**			**Some of the Time**			**All of the Time**		
		n	%		n	%		n	%
	St	5	13	St	25	64	St	9	23
	Teac	0	0	Teac	6	86	Teac	1	14
	Overall	5	11	Overall	31	67	Overall	10	22
2	No responses				n	%		n	%
				St	16	41	St	23	59
				Teac	3	43	Teac	4	57
				Overall	19	41	Overall	27	59
3		n	%		n	%		n	%
	St	18	46	St	18	46	St	3	8
	Teac	5	71	Teac	2	29	Teac	0	
	Overall	23	50	Overall	20	43	Overall	3	7
4		n	%		n	%		n	%
	St	5	13	St	15	38	St	19	49
	Teac	0	0	Teac	5	71	Teac	2	29
	Overall	5	11	Overall	20	43	Overall	21	46
5		n	%		n	%		n	%
	St	5	13	St	18	46	St	16	41
	Teac	0	0	Teac	6	86	Teac	1	14
	Overall	5	11	Overall	24	52	Overall	17	37
6		n	%		n	%		n	%
	St	11	28	St	23	59	St	5	13
	Teac	0	0	Teac	6	86	Teac	1	14
	Overall	11	24	Overall	29	63	Overall	6	13
7		n	%		n	%		n	%
	St	7	18	St	22	56	St	10	26
	Teac	0	0	Teac	7	100	Teac	0	0
	Overall	7	15	Overall	29	63	Overall	10	22
8		n	%		n	%		n	%
	St	6	15	St	19	49	St	14	36
	Teac	0	0	Teac	5	71	Teac	2	29
	Overall	6	13	Overall	24	52	Overall	16	35
9		n	%		n	%		n	%
	St	4	10	St	21	54	St	14	36

	Teac	0	0	Teac	6	86	Teac	1	14
	Overall	4	9	Overall	27	59	Overall	15	32
10		n	%		n	%		n	%
	St	10	26	St	27	69	St	2	5
	Teac	3	43	Teac	3	43	Teac	1	14
	Overall	13	28	Overall	30	65	Overall	3	7
11		n	%		n	%		n	%
	St	6	15	St	17	44	St	16	41
	Teac	0	0	Teac	5	71	Teac	2	29
	Overall	6	13	Overall	22	48	Overall	18	39
12		n	%		n	%		n	%
	St	7	18	St	28	72	St	4	10
	Teac	0	0	Teac	4	57	Teac	3	43
	Overall	7	15	Overall	32	70	Overall	7	15
13		n	%		n	%		n	%
	St	3	8	St	22	56	St	14	36
	Teac	2	29	Teac	4	57	Teac	1	14
	Overall	5	11	Overall	26	57	Overall	15	32
14		n	%		n	%		n	%
	St	20	51	St	18	46	St	1	3
	Teac	1	14	Teac	6	86	Teac	0	0
	Overall	21	46	Overall	24	52	Overall	1	2
15		n	%		n	%		n	%
	St	4	10	St	25	64	St	10	26
	Teac	0	0	Teac	5	71	Teac	2	29
	Overall	4	9	Overall	30	65	Overall	12	26
16		n	%		n	%		n	%
	St	3	8	St	33	84	St	3	8
	Teac	0	0	Teac	6	86	Teac	1	14
	Overall	3	7	Overall	39	84	Overall	4	9
17		n	%		n	%		n	%
	St	10	26	St	21	54	St	8	20
	Teac	1	14	Teac	4	57	Teac	2	29
	Overall	11	24	Overall	25	54	Overall	10	22
18		n	%		n	%		n	%
	St	4	10	St	17	44	St	18	46

	Teac	0	0	Teac	4	57	Teac	3	43
	Overall	4	8	Overall	21	46	Overall	21	46

Table 1: Responses to questions from questionnaire.

Data was collected by the use of questionnaire where quantitative data was collected in response to posed questions and qualitative data was collected to explain the participant's response to the posed questions. Analysis of both sets of data was used to form the discussion and the conclusions around the questions and drawn together to make conclusions against both of the research questions. The quantitative and qualitative data was connected through the discussion of each question with the quantitative data being used to identify themes, and the qualitative data to form discussion around these themes and to extrapolate participant's perceptions and reasons for indicating the response they did. Analysis of the data initially identified trends and patterns using the quantitative responses. Further extrapolation and explanation of the answers was enabled through the qualitative responses. Although a small sample, the sample is adequate to draw out the perceptions of the participants and draw some overall themes and conclusions.

Data Analysis and Findings

The questionnaire was developed by looking firstly at various questionnaires available online with a small group of teachers, then discussing and developing questions that we felt would best illicit responses around the key areas of the study. Questions within the questionnaire were separated into two main themes. Questions one to eight related to trying to elicit responses around student motivation and engagement and focussed on observable behaviours that teachers could see within their classrooms that may indicate a higher level of engagement and motivation in the learning task. Although questions 1-8 do not necessarily mention motivation directly in all of them, they were asked on the premise that a student who does better with their learning, achieves more and gets more completed, will have more task success or higher levels of achievement motivation [14].

Questions nine to eighteen related to trying to elicit responses around student's access to learning and further learning opportunities. The purpose of these questions were to ascertain whether a student who is involved in a task on a device, uses the device to access further learning or gets distracted from their learning by using the device for activities other than what was described in the learning task. Questions also try to decipher whether the distraction removes the student completely from the learning task or whether the student or teacher perceives there is some form of learning still happening even though distracted from the set task.

Questions One to Eight - Motivation and Engagement: Overall Themes

The overall trends in the data presented clearly shows a perceived correlation between the use of a digital device and a perceived increase in students' motivation towards their learning and learning tasks from both a teacher and student perspective. Although the perceived correlation varies between responses in the 'some of the time' and 'all of the time' categories, this group of participants, within their learning environment find that the use of a device does increase their motivation to learn and complete learning tasks. Students motivation towards their learning and learning tasks has been broadly gauged using questions that enquire into the ease of task, how hard students work, their willingness to complete tasks and to what standard, their independence, their excitement about learning, and their overall motivation to learn when using a device. These questions were used to gauge different factors that may influence student motivation to learn and complete learning tasks as well as the identifiable behaviours that may reflect learning motivation. There are obvious limits to the breadth of the conclusions that can be drawn beyond this small exploratory study; however it is obvious that the use of digital devices does have a perceived impact within this learning environment on the motivation of students. The transference of these results and the application of these results into other learning environments would need to be tempered with caution.

The data and analysis of questions one to eight also clearly shows a trend that students perceive the impact of digital devices on their motivation is much higher than that of the teachers. There may be a variety of reasons why this would occur but one issue raised within the written response was that digital devices are a common tool for students outside of the class, in their social life and at home. We would suggest what we are seeing is what Prensky [15]. would describe this as the different perspectives between digital natives and digital immigrants; teachers who are learning to use digital technology versus students who were born and growing up using it. Many students have used digital devices as a normal part of their life for many years, and integrate their use into their lives at school and at home naturally. The teachers who are more commonly older, are more traditionally digital immigrants and need to not only learn the use of the technology, but to learn how the use of digital devices can be used within a learning context. For some of the teachers, or digital immigrants, they may never adapt to the use of the digital devices to a point where they become a natural part or an extension of the learning environment. Students see the use of a digital device as a necessary part of who they are and how they operate, yet many teachers are still coming to terms with their use and the reach that digital devices have to open up the world in general and the world of learning with the extension of the classroom beyond the traditional classroom walls.

As classroom environments continue to develop we suggest you will always have this conflict between what has occurred in the past, or in a more traditional classroom, and the need for learning environments to evolve and change to reflect the learners needs and the changing construct of knowledge, who has access to it and how it is accessed. The trend we see, through reading the literature and the data within this exploratory study, is the shift in classroom pedagogy more towards a student centred learning environment where students have more autonomy over the direction that their learning takes within guiding parameters of the teacher. Within the written responses to the questions it was clear that students and teachers perceived that the independence level of the students increased with the use of digital devices. From the written responses to questions, students feel they have more control over their learning as some of the comments stated

students were able to access learning using a device much easier and quicker than in a traditional setting, and can learn using a variety of learning approaches, such as access to YouTube and online tutorials. Students have more control maybe not over what they learn but how they learn and the way they access information. From the responses higher levels of control from students lead to higher levels of responses that indicated an increase in learning motivation. Students are not reliant on the teacher to give the information or the answer to them, they are able to access a plethora of information based on a topic and have it delivered to them in a variety of ways.

The place of the digital device in this move towards more student centred learning environments has another key part to play. The data clearly showed, in the written responses, that the majority of students found learning easier and quicker using a digital device with many of the students commenting on the assistance it gives them particularly with presentation of their work, writing and editing. For many students their responses show that the use of a digital device removes some of the learning barriers that may have slowed or excluded them from learning activities in a more traditional classroom. Students find this a motivating factor in their learning as they feel rewarded when they are moving through tasks more quickly and with more ease. The teachers, in their written responses however raise what they feel is a emerging problem with the learning behaviours and students use of devices. All of the teachers raised, throughout their responses, the issue of the diminishing quality of students work, not in terms of its presentation, but in its depth of thinking and content. One of the teachers discusses that the speed and pace at which students are moving through learning tasks is diminishing the thought and quality of content of their work. One teacher discusses that with traditional pen and paper, it may take more time for the students to produce their work, but this time allows much more thought and care to be taken with the production of the piece and they suggest more higher level thinking about the task. Other teachers also commented that the presentation of work was to a much better standard, as the barrier of handwriting, spelling and editing to a certain level is removed when using a digital device, but all commented they felt that the content within students work and presentation was not always of the same quality. Putting digital devices aside, this has always been a struggle within classrooms and we can remember classmates focussing on the aesthetics of their work such as great looking borders, headings and decorations, maybe to the detriment of the content. Reward came from the work looking good. For us the position that this discussion develops is that digital devices are learning tools, to be used when appropriate, and other methods, including traditional pen and paper still have merit if the purpose warrants it's one of the teachers said in their written response, the quality of the task presented to the students always needs to be looked at to ensure it is providing enough challenge. If students move through a task too quickly, find it too easy, or are not motivated to present work that shows a higher depth of thinking, then this may be down to quality of the learning task to motivate the student and not the digital device.

For some students however they consistently responded throughout the questionnaire that the use of a digital device had only some or no impact on their learning motivation. In the questionnaire they consistently chose the 'none of the time' category, and although using digital devices in their classroom, their written responses were not positive overall. Looking through these students written responses they all expressed that they are motivated to learn whether using a device or not, put in equally the same amount of effort with or without a device and produce work of equally the same standard whether hand written or on a digital device. It would be interesting to look at the achievement level of the students who were in this sample of respondents and see whether or not they were high achievers and whether their responses were linked to the engagement and challenge level of the task, and not the device use. All of these students, throughout their responses, commented on the distraction that the use of a digital device caused. Although the data shows a perceived correlation between the use of a digital device and a perceived increase in students' motivation towards their learning and learning tasks from both a teacher and student perspective, without fail, in all written responses to all of the questions, students and teachers raised the issue of distraction caused by the use of the device. Thirty three written responses out of all written responses to the questionnaire mentioned distraction as an issue when using a digital device. This issue will be discussed in more depth in the next section.

Question Nine to Eighteen – Access to Learning and Learning Opportunities: Overall Themes

Overall the data and written responses show a clear perception that students and teachers believe that students' access to learning opportunities is increased when using a digital device within their learning setting. The degree of impact varied between the two categories of 'some of the time' and 'all of the time' and there was a clear differentiation between students and teachers as to how strongly they thought this correlation was. Students consistently indicated that the use of a digital device had more of a positive impact than teachers and was less of a distraction to their learning. Teachers' responses, although still on the positive side, were more conservative in their responses and overall indicated that the use of digital devices caused more of a distraction than indicated by the students. As raised in the discussion to questions one to eight, this may be bought about by the difference in the view of the device by teachers and students, one from the perspective of a digital native and one from the perspective of a digital immigrant [9]. We would also propose that teachers come from a more educated position in terms of the behavioural attributes that should be evident within a classroom and may be more observant or aware of how or when the use of a digital device fits within this. This tension between what students want a classroom to look like and what teachers expect is a continual tension that each generation of teachers will find with the next generation of students and technology. I don't think this is unique to the use of newer digital devices, but there has always been tension between the introduction of a new learning tool, a younger generation's ability to use it and this challenging more traditional constructs and roles within the classroom. The traditional notion of the teacher as the fountain of knowledge is being continually challenged and the way in which the teachers and students interact and the way the learning occurs within the classroom is being challenged. Even the traditional way teachers construct learning tasks needs to be modified to enable the effective use of digital devices. No longer are learning tasks linear, and work from a question or problem through a process to finding an answer. Learning within this open expanse of knowledge that a device can bring, may start from the same place but can deviate into many facets of learning that cannot be planned for in the traditional way, Even the traditional timing of lessons needs to be adjusted as often the traditional answer that may have needed to be skimmed or scanned for within a book, can now be found in a matter of seconds.

One of the issues this does raise however how current information is constructed is, the validity or acceptance of this knowledge, and who

controls it. Within societies, countries and religions, there has traditionally been a constructed idea of what knowledge is correct and how that looks for a particular society, religion or cultural group. Books and text, particularly historical documents given to students often reflected these positions. To a certain degree information could be controlled and restricted to students to ensure the 'correct' version of knowledge was portrayed. There still needs to be concern about the validity or reliability of information gathered off the internet, however the barriers and rules around who holds and controls this knowledge are being continually modified. Students are now able to access information, points of view and perspectives that would have been off limits or unobtainable within a classroom context a few decades ago. Connectivity to the world allows students to experience learning well beyond the boundaries of their physical space. The challenge for teachers therefore is how do you harness this, or even regulate it to ensure that you are still providing quality learning experiences for students.

This leads onto the next broader issue that is raised within the data and responses from teachers and students. In trying to answer the research question of whether a student who has their own device has a perceived increase in access to learning opportunities, we feel there is a mismatch in students' and teachers' understanding. Within questions twelve and thirteen students and teachers were asked to indicate if students used their device for other purposes and if they did whether this use was task related. Although the written responses in question twelve and the responses in question thirteen would indicate that students feel they are using the digital device for a learning purpose, the responses indicate, particularly from the teachers, that they felt devices are being used for non-task related purposes. The difference between the two is important to identify for the sake of answering the research question, as although teachers may have indicated the use of the device was not related to the learning that was occurring in front of the students at the time, the responses indicated that much of what the device was being used for still had learning value. Teachers identified that the device was not being used to achieve the task at hand; however this did not mean that learning opportunities were still not being accessed and possibly increased by the device use. As stated earlier in these circumstances you may be able to argue that the use of the digital device may be decreasing students access to the learning task in front of them at that point in time, but may still be helping students to access other learning opportunities. This is supported with the discussion around the data and responses to question fifteen, as both students and teachers indicate that they believe the use of a digital device helps extend students' learning some or all of the time. We would say the issue relates more to when students are choosing to extend their learning. As raised in earlier sections it is suggested by some responses that students are bored with the learning task presented and it may be at these points that students look at using the device to entertain themselves or seek further learning or extension of the learning that they are disengaged from. The data and responses within this small exploratory study is not strong enough to state this is a definite pattern of behaviour, however the types of responses indicate that teachers and students may have responded to these questions from a different understanding or position.

The opposing position to this however needs to be explored as data clearly shows both teachers and students acknowledge that the use of a digital device can be a distracting factor in the learning of students. Thirty three written responses out of all responses to the questionnaire mentioned distraction as an issue when using a digital device. Twenty five of the responses were from students and eight from teachers. Proportionately though, teachers identified distraction as an issue more than students. It is important to look at what the students are doing when there is a perceived distraction by the device. The answers to question twelve indicated that emailing, accessing the internet or web browsing, looking at YouTube videos, reading the newspaper online and playing games were the main contributors to this distraction. What this study does not enable us to identify is what the purpose of these activities were. The purpose of the activity is important as it could genuinely be a distraction from the learning task or it may also be a learning opportunity being accessed at the inappropriate time. For example, it could be argued that although a student reading the online newspaper when they are meant to engaging in a learning task is a distraction; it could still be seen as a learning opportunity in the broader sense. Some of the students' responses indicated that they were much more able to access a wide range of information and resources when using a device, beyond what the teacher knows. One of the teachers described this type of learning as 'following their nose', finding new learning while 'wandering' through websites and resources like YouTube. It may be that these activities are being perceived as being a distraction, when we may actually need to look more closely at the possible learning value within the perceived distracted behaviour.

Secondly, we would suggest that in a traditional classroom, before the prevalence of digital devices, there were always students who were distracted, or absent from the learning task through either their off task behaviour or 'daydreaming', not cognitively engaging with the task. We would suggest that digital devices may not be more of a distraction but just a more visible activity that students would choose to do instead of for argument sake, daydreaming. Although it may be that the device is genuinely creating a distraction, it could equally be that although not engaged in the prescribed task, they may be distracted by the device, just because it is there to use, not because the use of the device is causing the distraction. The question that really needs to be explored with further research is not whether a digital device is a distraction, but whether a digital device is more of a distracting factor than other more traditional distractions.

Conclusion

It is clear that the paradigm in which learning is occurring is continuing to develop and change and the place of digital devices within this is testing the traditional boundaries of learning. The changes in the learning environment that have occurred over the past decade within New Zealand have been significant and the push to cement digital devices into this change is adding tension to this change. It is clear from the feedback from the participants within this study that both groups see clear benefits to the use of digital devices within the learning environment and limitations to their use. We don't think this tension is new or particular to the digital devices currently being introduced to schools, but is just another step in the continued development of the modern learning environment. Previous technological advances probably had similar tensions and discussions around them, such as the introduction of multimedia devices such as interactive whiteboards. We would suggest however that earlier advances in educational technology, although still creating a tension between the digital natives (students) and migrants (teachers), have not challenged the traditional notion of the learning environment to such an extent. The introduction of easily accessible devices and the connection of these devices to the internet is creating a learning environment beyond the traditional walls, one that is to a certain extent unknown and not controllable. Students within an instant can

go from learning in a traditional way from the teacher and students within the class, to accessing opinions and knowledge constructed from a plethora of sources around the world. This opens a whole arena of learning possibilities and environments for students that can be explored but also need to be controlled to ensure integrity and safety. What this study does highlight is the further discussion that some educators need to have to better explore the planning that is needed to better implement the use of the devices within the learning environment, exploring the utilisation of the aspects of the device that students want to use which could lead to higher levels of motivation or engagement and access to learning. The study clearly shows that the participants believe that the use of digital devices does create much quicker access to information through the internet and provides a variety of tools such as YouTube, where students are able to find multimedia clips to help with explaining learning tasks and explanation of concepts.

What this study also highlights is that although the participants within the study acknowledge the benefit of using a digital device to access learning opportunities and to motivate learners, it also creates an avenue where students can be easily led away from the immediate learning task and distract from the task at hand. The limitations of this study do not allow an in depth identification of whether the distractions identified by the participants are leading to alternate learning opportunities, but does show that students at times are disengaging with the learning task at hand to explore on the internet, access emails, play games, and access multimedia content on YouTube. At times these may be being used for furthering understanding of the task but at times they may be distracting from the required learning task. Further investigation would be needed to ascertain whether it is actually the device creating or increasing distraction or just facilitating a student into an off task behaviour who would have been distracted in a traditional classroom context anyway.

Overall there is a perceived increase in motivation towards learning and learning tasks when students are using a digital device. The strength of this perceived correlation between the use of the digital device and increased motivation and access to learning task is much stronger with students than it is with teachers. We have suggested that this is because the students use technology and devices more naturally as part of their daily lives. This study does not endeavour to identify whose perception is more accurate, however we think it is worth noting that the divide between these perceptions is one that we would argue will always be evident. The challenge for educators moving forward is to identify whether devices are distracting students because the current learning in front of them is not engaging them, or whether it is genuinely a tool that will cause distraction within the learning environment.

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