A SOCIAL COMPUTER LAB: SOCIAL DEVELOPMENT

IN THE CONTEXT OF EDUCATIONAL TECHNOLOGY

by

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ABSTRACT

As technology continues to advance and become a greater part of our daily lives, teachers are using more technology in classrooms where students are developing socially as well as academically. Though the academic benefits of educational technology have been researched extensively, there is a lack of research on its influences on social development. Studying the social environment of a computer lab will help us understand how educational technology is influencing students' social development. The current research is an observational study of student-to-student interactions in a kindergarten computer lab. Accounts of interactions, noted as either Non-Goal Directed or Goal Directed, out numbered instances of Not Interacting. Because student-to-student interactions, and therefore social development, take place in the context of educational technology, more research needs to be conducted on how technology influences students' social development.

Introduction

An alarm goes off. The day begins. Within the first hour of the day most people check emails, open Facebook, send text messages, consult their GPS, and so on. Even just 20 years ago this would not have been most peoples morning routine. Now, well into the 21st century, technology has clearly become an unavoidable part of our daily lives. Advancement is good though. The latest gadgets make life easier for many, whether it is the GPS in a car or the constant presence of the Internet on an iPhone allowing access to emails, social media, text messages and the entirety of human knowledge through Google. There is no reason not to embrace modern technology in all its various forms. However, we must take caution in *how* we embrace technology and teach the next generation to embrace technology.

The next generation of people will experience the greatest effects of our use of technology here in the present. The children of today are growing up with iPhones, iPads, laptops, and the Internet. When thinking about their development, we must consider what experiences are they not having out in the back yard or at the park when they spend time sitting with a screen in front of their faces. We must also consider the knowledge and skills are they gaining as they interact with the devices that the society of their time will rely on for nearly everything. If it is used properly, technology has the potential to benefit our children as they grow, preparing them for a future heavily dependent on electronic devices. If used poorly, technology could be detrimental, eliminating experiences and interactions with the physical world. One of the most crucial places we need to carefully and properly use technology is in the classroom. Children spend a large amount of time, over half of every weekday, in school. Therefore, school and the school environment play a huge role in a child's development. Cognitive development is the main focus of education, but a large amount of social development

takes place in the classroom as well (Lash, M.,2008;Galbraith, J., & Katz, L., 2006). Children

interact socially and make friends in the classroom, during lunch, and at recess. In school

children are not only learning how to read, write, and count, but also how to act and behave

around other people, particularly around their peers. This knowledge and experience will lay the

foundation for their social interactions in the future.

      Since school plays a crucial role in how children develop both cognitively and socially,

we need to consider what kind of technology is being used in the classroom, how it is being used,

and what affects it is having on children's social and cognitive development. Many studies, such

as the research conducted by Atta, et. al., (2013), Boeglin-Quintana and Donovan (2013), and

Fesakis, Sofroniou, and Mavroudi, (2011), have focused on the effects of educational technology

on academic. Forms or educational technology used in classrooms include computer games,

PowerPoints, in-class internet searches, and online homework. Teachers use these programs and

devices to enhance students' learning and the retention of knowledge. However, students are

learning more than simply the knowledge and content of their class's academic material. Social

development is happening through the social environment of the classrooms as well. This means,

in short, technology is likely impacting children's social development by changing aspects of

their social environment. Few researchers are looking into the changes technology is bringing to

the social environment of the classroom, creating a general lack of research on this topic.

      I began to address this problem with an observational study. I observed a kindergarten

computer lab in order to see if and how the students interacted with each other. I hoped to gather

information on the social interactions that take place in the technological environment.

Specifically, I wanted to know if student interactions take place while students play and work on

computers in computer labs. I hypothesized that I would see few interactions between students

and that students would mainly focus on their own computer screens and computer games. If students are interacting, some social development is taking place in the computer lab. Considering the lack of research on social development in the context of computer labs and other forms of educational technology, we do not know how the social development of students who regularly participate in computer labs will be different from that of students who do not participate in a computer lab.

Review of the Literature

Forms of Educational Technology

Many different forms of technology have entered the classroom. Sometimes the use of technology in the classroom is as simple as a recording. In a study by Boeglin-Quintana and Donovan (2013), students used iPod Shuffles as audio books. They listened to a narrator as they followed along in their physical books. The hope of the researchers' and teachers' was for iPod users to gain more fluency, vocabulary, and comprehension than students who spent their time reading silently. This was not the outcome of the study. The listening students did not improve over the silent readers in the areas the researchers expected. However, students who listened to the audio book came out of the study with a greater sustained interest in the stories and the process of reading (Boeglin-Quintana & Donovan, 2013). They were more motivated to read. The researchers noted that part of the power of educational technology seems to be in the novelty and fun of the technology (Boeglin-Quintana & Donovan, 2013).

Teachers also use computer and video games, which are slightly more complex than listening to an iPod, to enhance education and provide learning opportunities for students. One such game is Shapes Planet, an online computer game that seeks to familiarize students with the names and appearance of various geometric shapes. Children in Fesakis, Sofroniou, and

Mavroudi's (2011) study of Shapes Planet collaborated, divided work, and talked with each other about what they were doing. The researchers noted many different aspects of the academic and social environment of the classroom while the students played. The students' interactions with each other and positive facial expressions concerning the game were viewed as signs that they were enjoying the game (Fesakis, Sofroniou, & Mavroudi, 2011). The researchers and teachers generally considered this game as an effective learning tool, providing an opportunities for students to engage and collaborate on a project which inevitably forced them to problem-solve together and communicate their issues (Fesakis, Sofroniou, & Mavroudi, 2011).

As the ages and capabilities of students change and advance, finding games that are developmentally appropriate and provide useful content becomes more challenging for teachers. With older students, some more complex games become options. Maguth, List, and Wunderle, (2015) looked at the use of empire-like games. These games allow the players to build a virtual empire or kingdom that interacted with other empires or kingdoms. The game was incorporated into the core curriculum with very specific and concrete connections, providing an example of how technology can be appropriately implemented into a classroom's academic environment. The researchers noted the importance of making clear, distinct connections between computer games and the core curriculum (Maguth, List, and Wunderle, 2015).

Reasons to Use Tecnology

Play is a component of these computer and video games that attracts students and teachers alike. Melleker, Witherspoon, and Watterson's (2013) study provides an excellent example of how powerful play can be when it is applied to learning. The video game in this study taught children nutrition content and good food choices. To play the game, students stepped and moved on a footpad attached to the gaming system. While they played, the students

expressed enjoyment and interest in the material. The teacher reported that the students talked with each other later on about the content of the game. Students test scores for the content went up and they reported that the psychical movement helped them prepare for and return to focusing on their schoolwork. The students preferred this technology rich environment (Mellecker, Witherspoon, & Wetterson, 2013). The researchers noted that preference and enjoyment seemed to be a determining factor in the effectiveness of educational technology. As students' interest increases, their motivation to spend time around material also went up (Mellecker, Witherspoon, & Wetterson, 2013). This is similar to the results of Boeglin-Quintana and Donovan's study (2013) on the iPod audio books. The students who listened to the iPod during their reading time were more interested in and motivated to read after spending time using the iPod (Boeglin-Quintana & Donovan, 2013). This use of technology is beneficial to students overall attitude toward reading because students were excited to use the device. However, as students become used to using the iPod in school, the intrigue and novelty might be lost and the iPod's effectiveness may decrease. Another aspect of using the iPod as an audio book is the fact that students are alone when they are listening to the books. This could also quickly decrease students desire to use the iPods. Johnson and Sherlock (2014) found that not having shared experiences with technology and personal devices decreases the desire to use said technology. Johnson and Sherlock had students in their study use Personal Learning Environments, a type of educational technology with limited person-to-person interactions. The students struggled to find motivation to use the socially limiting program. The researchers viewed this student behavior as a demonstration of students desire for social interactions (Johnson & Sherlock, 2014). It may be the shared social experiences we have using technology that make the device "fun".

Teachers and students

Students are not the only ones who are affected by educational technology. Teachers benefit from observing and evaluating their students interactions with academic content through the computer games. Fesakis, Sofroniou, and Mavroudi (2011) found in their study of the game Shapes Planet that, while the children played the game, the interactions between students and the teachers gave the teachers a unique and helpful perspective on what content individual students struggled with in the lesson. Teachers viewed this game as a generally successful practice tool for learning content, but also for incorporating internet skills, reading, naming, building shapes, colors, and number concepts. Through Shapes Planet, children also learned and practiced following recorded instructions. This skill, though it seems small, is useful and necessary for everyday life, as written and recorded directions are present in any kind of manual, recipe, installation procedure, ect.

Though there are many benefits for educational technology to both the students' growth and the teachers' understanding of the students' progress, we cannot simply leave students to engage in activities on computers solely. Gebre, Saroyan, and Bracewell (2014) argue that technology should be used as a tool to embellish and supplement learning, and that students still need to engage with each other, collaborate, and have learning goals and tasks clearly defined for them. As student-to-student interaction is correlated with higher academic achievement (Gebre, Saroyan, & Bracewell, 2014), these researchers suggest that students reflect with each other on their learning and what they have learned through the use of technology. To accomplish this, teachers need to structure the learning environment in a way that enables students to engage with each other.

Despite its benefits, technology in the classroom also has the potential to either increase or decrease some of the interactions between students and teachers. Johnson and Sherlock (2014)

were concerned that the edition of too much technology into the classroom might make the

environment too complicated and complex for these engagements. If technology creates an

environment that is too complex and difficult to manage, it could harm the teacher-student

relationship. Students become "atomised" or mentally isolated in a technological environment in

which their shared experiences can only take place through the technology itself. It is better if the

technology incorporates real-time interactions so students can use personal devices,

communicate and share experiences, and coordinate activities (Johnson & Sherlock, 2014).

      Incorporating technology into the classroom environment appropriately can be

challenging. Much of the pressure to use technology effectively in the classroom falls on the

teacher. A common theme of the research surrounding educational technology is a lack of

professional development in technology for teachers. Teachers need to be better equipped to

utilize technology in their classrooms, as few resources exist to help teachers implement the

more compelling pieces of technology such as educational video and computer games. More

professional development for teachers in this area will go a long way to improving the

effectiveness of educational technology as a tool to improve academics, but also as a tool to

promote pro-social development (Gebre, Saroyan, & Bracewell, 2014). The perspective teachers

hold toward the role of technology in the classroom can affect how the technology is used and

therefore how it affect students. Professional development will help with teachers understand

how to frame technology in a way that best supports their students' social development.

Current Research

      As is demonstrated above, there has been concern over the effects of technology on social

development in the past. However little research exists on the direct effects of technology on the

social environment in the classroom. Research is mainly about the effects of technology in

school on academics (Atta, M. A. et. al., 2013; Boeglin-Quintana, B., & Donovan, L., 2013; Fesakis, G., Sofroniou, C., & Mavroudi, E., 2011). Academics is not the only component of school because classroom learning does not take place in a social vacuum. A social atmosphere is going to develop among children wherever they are, including and especially in school (Lash, M.,2008; Galbraith, J., & Katz, L., 2006). The social atmosphere that develops in a classroom plays a key role in the school environment and can change students' behavior (Stone, S. J., 1993; Crean, H. et. al., 2009). Since technology is becoming a greater part of the classroom environment and, therefore, students' social atmosphere, research needs to evaluate the role educational technology plays in the social development of students.

As I approached the topic of educational technology and its role in social development, a few general and important questions came to my mind. Setting academics aside, I wanted to better understand the social environment of computer labs in schools. Specifically, I wanted to see if the use of computers as a supplement for learning eliminates student-to-student interactions. Also, if social interactions are present in computer labs, I wanted to know of what kind or quality were the interactions.

Method

I observed and took notes on a kindergarten class at a Fort Worth area private school during their computer lab time. I made five (5) observations over the course of the 2014-2015 school year. The students spent 30-40 minutes in the computer lab. The students were responsible for logging themselves into their computer accounts, opening the correct internet windows, navigating to the proper site, and selecting the math, language, or color games for the day chosen at the beginning of class by the teacher. Students were organized in groups of two (2), called buddies. The students had the same buddies through the entire year. The teacher

instructed the students to first ask their "buddies" for help if they experienced trouble logging in or in the game before raising their hand to let the teacher know they need help. She reminded the students of this procedure at the beginning of every lab and periodically through out their computer time. The number of students who attended computer lab varied from six (6) to ten (10).

Note Taking and Codes

I took two forms of notes during my time at the school: one for quantitative data and one for qualitative data. I took quantitative notes of the student's interactions during the computer lab in order to gather data on how many interactions students had and what kind they were. My goal as I took these notes was to write down all or as many interactions as I could without trying to interpret what I was witnessing. Because my research question revolved around whether or not students were interacting, I made an effort to note when students were not interacting as well as when they were interacting. As I began analyzing my notes I worked through many different codes for the interactions, trying to classify what I had observed. I realized the purpose behind the interactions was worth noting. The codes end are as follows:

Students Interacting: When students talk, comment, advise, help each other, or in any other way socialize or attempt to socialize.

Non-goal Directed Interacting: When students interact in a way that does involve working towards an end goal.

Goal Directed Interacting: When a student is assisting, advising or helping another student in any way, or in other words cooperate toward an end goal.

Students Not Interacting: When students are solely engaged in what they are doing as shown by what they are focusing on.

Waiting Student: When a student is waiting for assistance (or not attempting to make progress on their own computer)

Distracted Students: When a student's eyes look at something other then his or her own screen, particularly, to look at another students screen, as to show perhaps their mind is wandering.

Anywhere there was a Student Interacting code there would also be either a Non-Goal Directed Interacting code or a Goal Directed Interacting code, as these are two categories of Student Interacting. These codes developed through the course of the observations. Some of the codes I looked into at first were helping interactions, seeking interactions, neutral interactions, and individual interactions. All of these were eventually separated and condensed into Non-Goal Directed and Goal Directed. The code Distracted Student came from the noticeable tendency of the children to let their eyes wonder from their own computer screen to another students screen, but they did not speak to the student or interact with him or her in any way.

The second kind of notes I took immediately after the computer lab ended in order to capture qualitative data on the social atmosphere during the computer time. These notes took the form of reflective analysis in which I recoded anything that happened that was particularly note worthy or anything from the social-emotional environment I felt would be lost in the quantifying of my notes taken in class. These notes are used to help build a deeper and more accurate picture of what was taking place socially in the classroom.

Results

The majority of my in-class quantitative notes were coded with multiple codes. As seen on in the table below, there were more than twice as many instances of Students Interacting as there were Students Not Interacting. Of the interactions that took place, nearly half of them were Goal Directed Interacting while the other half were Non-Goal Directed Interacting. Combinations of interactions took place as well. Instances of students waiting for assistance, interacting while waiting, and being distracted while waiting were obvious and common enough to be note worthy. There were twice as many instances of quietly waiting for assistance as there were interacting while waiting for assistance. A quality of Not Interacting that was not coded for but worth noting is the presences or absence of a buddy. Some students did not have a buddy at times because their buddy was absent a particular day. These students did not interact or seek interaction as much as did their classmates with buddies who were present. Many of the instances of Not Interaction were of these students, who seemed to focus more strictly on their computer games.

The qualitative analysis also revealed some interesting patterns. Some pairs of students were more engaged with each other on average than other pairs. That is, many of the interactions noted in the quantitative data came from the same pairs of students interacting many different times. The reflective analysis also revealed a class-wide flow to the social atmosphere. The students began talking and interacting with their buddies at the same time for a few minutes, and then the whole room would quite down. After a few minutes, the chatter would gradually grow again until everyone was talking and interacting, then the interactions would die down again. A class wide social environment seemed to connect all the students even though each individual

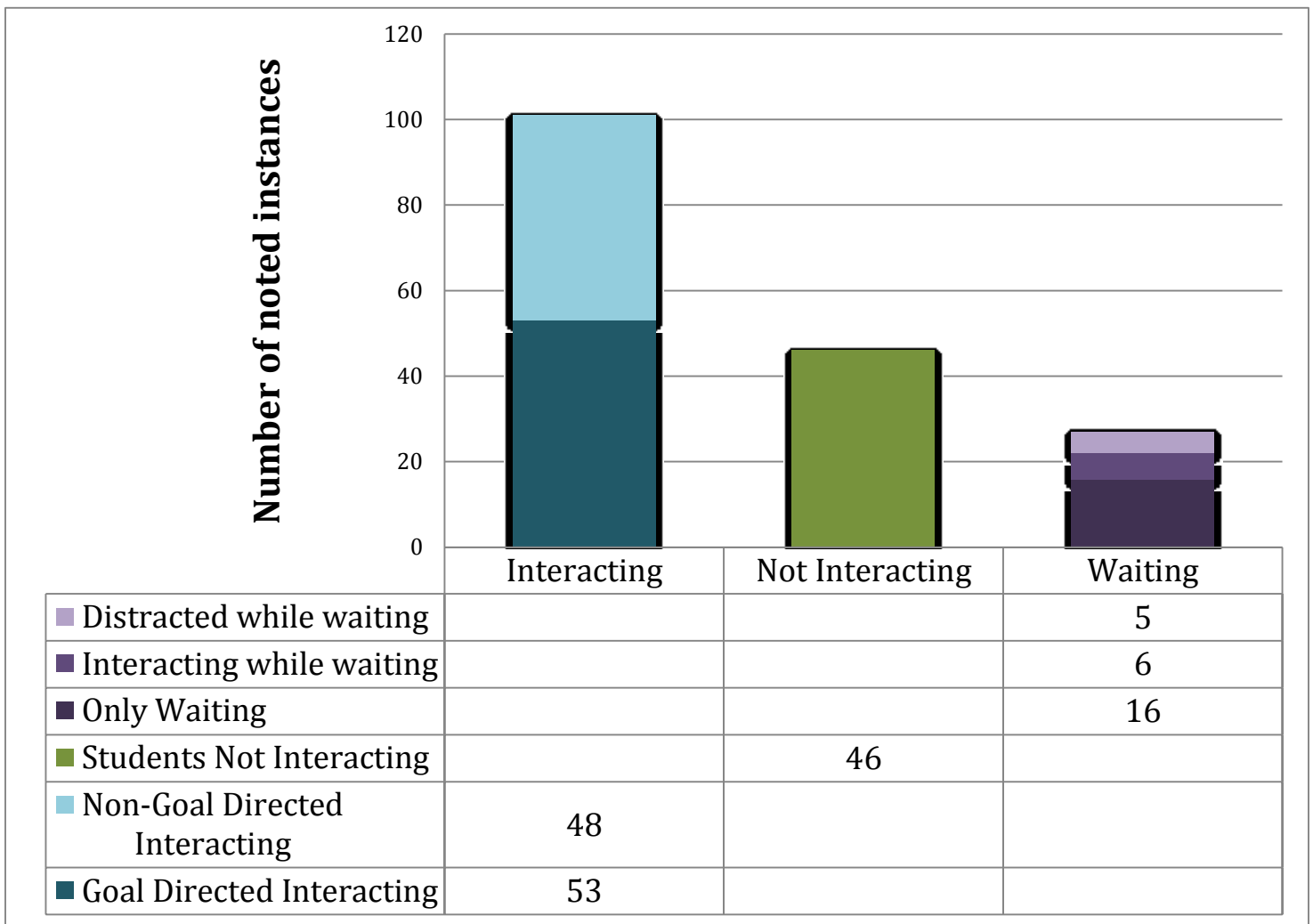|	Interacting	Not Interacting	Waiting
■ Distracted while waiting			5
■ Interacting while waiting			6
■ Only Waiting			16
■ Students Not Interacting		46	
■ Non-Goal Directed Interacting	48		
■ Goal Directed Interacting	53		

Figure 1

The graph and table above shows the total number of instances noted during the class time. There were twice as many instances of students' interacting as there were of students not interacting. Students' interacting is also broken into Non-Goal Directed Interacting and Goal Directed Interacting. Goal Directed Interacting slightly out number social interactions. Interacting while waiting comes from instances that were coded for both Interacting (Goal Directed or Non-Goal Directed) and Waiting. Distracted While Waiting comes from instances that were coded both Distracted and Waiting. Waiting comes from instances only coded for Waiting. The majority of instances students spent waiting for help they were simply waiting.

student rarely interacted with anyone except his or her buddy and the teacher. A very concrete

example of this class wide social atmosphere appeared during the second observation. As the

students were logging into their computers, one student began singing a little song the whole

class knew. All the other students joined in and the whole class sang this song for about 20-25

seconds while they worked at their computers logging themselves in and the teacher and I watched silently. The event was completely spontaneous.

Another observation made from the reflective analysis was the relationship between student's level of interaction and whether or not they and their buddies were playing the same game. Though the type of game was not part of the quantitative code, it was noted in the reflections that on the days the students were quieter and less interactive, the buddy pairs were playing different games.

A final observation from the reflective analysis was a note about how often one of the students in a pair would entirely neglect his or her own computer and play with the other student on their computer. The students were often negligent of their own computers while both they and their buddies were logged in and playing games. One occasion was unique. Each of the students had a note card with their login information on it. On the last day of my observations, the teacher forgot these cards. While she went to retrieve the cards, the students logged in from memory if they could. On this day, the first student in each pair to log in their own computer began playing and the other student stopped trying to log in and join their buddy in playing until the teacher returned.

Discussion

First and foremost this research tells us is that allowing children to play on computers as a structured part of their day during school does not eliminate social interactions during that time. Children are actually quite apt to interact while they are on computers if they are paired together. The fact that many of the instances of Not Interacting came from students who did not have a buddy supports this idea. Also, it is likely that the way in which a teacher frames and structures the computer time plays a role in the amount of interacting that takes place between

students. In the case on the class I observes, the framing and structure the teacher provided was placing the students in buddy pairs and instructing them to ask their buddy for help before asking her.

We also find from the qualitative analysis that having a buddy present seems to play a role in how the students engage with the computers. Students were willing to neglect their own computer games to watch and play with their buddy on his or her computer. The students may view the computer games as something that is better when shared. It was as though the computers were like any other toy or game with which a child would seek out others to play with them. This idea that computers and computer games could bee better when shared supports the possibility of an environment in which computers can be used to enhance social engagement with others present in the room.

Limitations

There were a few limitations to this study. An assessment of the validity of codes found 78.79% agreement without discussion and 93.94% agreement with discussion. Other limitations include the number of observations, the lack of notation of time-pasted in the notes, the fact that the quantitative data was based on a frequency count, and the possibility of mis-observations of students. This study would have been stronger if I had been able to observe longer, perhaps for an entire year. The lack of notation of time-past affects the way the no-interactions code is interpreted in the notes. An instance may be coded for no-interaction, but without a notation of time, there is no way to know for how long the students did not interact. This takes away some of the value of this code. The codes also added up to a frequency count, which does not always capture the depth of the interactions that are being coded. The reflective analysis attempts to bring some of this depth back into the data, but some aspects of the interactions will remain lost.

Finally, there is always the possibility that I mis-observed some of the interactions. This is always a limitation of observational research.

Questions for the future

This study brings forward a number of questions regarding educational technology and social development that should be addressed. The two most prominent questions relate to the way the teacher structures computer time. An important question to consider in future research is how do pairing students for computer time and instructing them to ask each other for help affect how much the students interacted with each other. The current study would suggest that these aspects of computer labs are connected to the students' social interactions, but as it was only an observational study, other research needs to be conducted to establish a relationship.

If it is true that teachers' placement and instruction of students in computer labs affects how students socialize, the social environment of a computer lab would likely benefit from an increase in the professional development for teachers in to educational technology. Professional development has been shown to improve teachers' integration and use of technology in the classroom (Ansyari, 2015). With proper professional development, computers and other devices could enhance students' social development in school. As the opening literature review shows, there is currently little professional development in educational technology for teachers. Teachers have access to technology that they can use in their classes, but not all of them know the best way to use the technology. This can result in poor use of computers and other devices in a way that may disrupt the social development of students. Research that focuses on the effects of teachers' framing and structuring of technology on the classroom social environment will inform and improve future professional development.

As we consider professional development for teachers in the area of educational technology, another big question comes to mind: should pedagogy change to fit technology or should technology change to fit the pedagogy? With the world becoming more and more technological, teachers may need to start incorporating an element of basic computer knowledge into their curriculums in order to adequately prepare their students for adulthood. For example, typing is becoming a necessary skill. Introduction of this basic computer skill is beginning early in some places. For students in the Highlands School District in Brackenridge, PA, typing classes begin in Kindergarten (DeNisco, 2014). Finding a balance between changes in pedagogy and changes in technology is a challenge many teachers and school administrators will soon face. More research on the effects of technology on social development and the classroom environment can help these school leaders find a working compromise between pedagogical methods and technology.

Another aspect of educational technology that future research should address is the actual design of the computer and video games. Simulations and animations in games have been found to be more motivating to students (Özdemir & Öner, 2015). Another study assessing the motivation of students in learning a foreign language found that role-play exchanges with peers through the Internet technology "Webquest" improved the students' language learning. The improved learning was then found to motivate the students to continue learning (Sumtsova, Azhel, & Buyankina, 2016). Collaborative games have also been found to enhance the learning experience of students (Chih-Yuan Sun & Yu-Ting Wu, 2016). Games that are designed with opportunities for social interactions built in might provide an enhanced learning environment for students. These concepts are most useful to game makers. In order to create effective computer and video games for use in the classroom, game makers need to know what works best and why.

More research investigating student collaboration through technology, the motivation of students to use technology, and other aspects of games would inform and benefit the designers of educational technology.

Children learn more than content when they play. They also learn the scripts of social interaction. In order for technology to help students learn social behavior it needs to involve students in social interactions. The nutrition game in the study by Mellecker, Witherspoon, & Wetterson (2013) encouraged the students to engage physically and mentally, bringing them together during the game. More games like this one that involve active and all-around engaging play could be powerful teachers of social interactions as well as academic content. Consider again the study by Maguth, List, and Wunderle, (2015). In this study, students each played their own version of the civilization-building game. When the class began, they had the option to collaborate together as a class, working on just one kingdom. This route would have added a different social dynamic to the classroom. The students would have had to work together in everything, discussing and making decisions on what they were going to do within the game. Working together on such a project would have produced a different social experiences than the experiences the students had playing on their own. Playing a civilization video game together as a whole class could create new social settings in which students must communicate their thoughts and consider the ideas of others in order to make a group decision. These experiences would have very different effects on the students' social development that the experience of each student playing the game on their own. Future research focused on identifying the crucial components of socially engaging games would inform game makers in how to design games and teachers in how to incorporate games.

Student-to-student interactions are not the only interactions that help students develop socially. Students gain social experience with adults when they interact with their teachers. Depending on how it is used, technology could come in the way of these interactions or it could enhance these interactions, just as it can enhance the interactions between students when one student seeks help from another. In one study, the quality of student-teacher interactions was found to influence students learning. Specifically, the students that had higher quality interactions with teachers came out of the class with a better understanding of the content (Ching-Huei Chen1, Kuan-Chieh Wang1, & Yu-Hsuan Lin1, 2015). Again, as educational technology changes and develops and teachers learn how to use technology in their classrooms, these teacher-to-student interactions need to be kept in mind. From a Vygotskian perspective, interactions build a relationship between students and teachers through which teachers can support students as they learn new skills. Learning requires a lot of support and scaffolding from other people through a meaningful relationship. If technology removes some of the student-teacher interactions, how will the scaffolding teachers provide change?

Conclusion

The next generation is growing up in this increasingly technological world. There is no doubt that technology in all its various forms will continue to play a crucial role in our everyday lives, including how we interact with each other. As the amount of technology in the classroom increase, more social development is taking place in the context of technology. We have yet to see whether this is beneficial or detrimental for children. We, as the guardians and providers of our children, need to gain a better understanding of how technology in schools is influencing students' social development so we can make informed decisions on how to implement educational technology in a way that is beneficial to our children's social development.

Understanding how educational technology influences students social development can help

teachers and school administrators know how best to utilize technology in the classroom and can

help inform those creating educational technology on what types of games, programs, and

activities are best suited for various students.

References

Ansyari, M. F., (2015). Designing and evaluating a professional development programme for basic

   technology integration in english as a foreign language (EFL) classrooms. *Australasian Journal*

   of Educational Technology, 31(6), 699-712.

Atta, M. A., Jamil, A., Ali, U., Ayaz, M., & Bashir, S. (2013). Comparative effectiveness of

   instructional technology regarding educational attainments of students at elementary level.

   Gomal University Journal of Research, 29(1), 49-55.

Boeglin-Quintana, B., & Donovan, L. (2013). Storytime using iPods: Using technology to reach all

   learners. *TechTrends: Linking Research & Practice to Improve Learning, 57*(6), 49-56.

   doi:10.1007/s11528-013-0701-x

Chih-Yuan Sun, J., & Yu-Ting Wu1. (2016). Analysis of learning achievement and teacher--student

   interactions in flipped and conventional classrooms. *International Review of Research in Open &*

   Distance Learning, 17(1), 79-99.

Ching-Huei Chen1, c. n. e. t., Kuan-Chieh Wang1, y. c. t., & Yu-Hsuan Lin1, y. c. t. (2015). The

   comparison of solitary and collaborative modes of game-based learning on students' science

   learning and motivation. *Journal of Educational Technology & Society, 18*(2), 237-248.

Crean, H., DuBois, D., Ji, P., Johnson, D., & Massetti, G. M. (2009). Methodological considerations in

   evaluating school-based programs to promote social competence and reduce problem behavior.

   Journal of Research in Character Education, 7, 103+.

DeNisco, A. (2014). Old skills make a comeback for the youngest students. *District Administration,*

   50(1), 20-20.

Fesakis, G., Sofroniou, C., & Mavroudi, E. (2011). Using the internet for communicative learning

activities in kindergarten: The case of the 'shapes planet'. *Early Childhood Education Journal,*

   38(5), 385-392. doi:10.1007/s10643-010-0422-0

Galbraith, J., & Katz, L. (2006). Making the social visible within inclusive classrooms. *Journal of*

   Research in Childhood Education, 21, 5+.

Gebre, E., Saroyan, A., & Bracewell, R. (2014). Students' engagement in technology rich classrooms

   and its relationship to professors' conceptions of effective teaching. *British Journal of*

   Educational Technology, 45(1), 83-96. doi:10.1111/bjet.12001

Johnson, M. W., & Sherlock, D. (2014). Beyond the personal learning environment: Attachment and

   control in the classroom of the future. *Interactive Learning Environments, 22*(2), 146-164.

   doi:10.1080/10494820.2012.745434

Lash, M. (2008, 08; 2015/3). Classroom community and peer culture in kindergarten.*36*, 33+.

Maguth, B. M. 1., List, J. S. 2., & Wunderle, M. (2015). Teaching social studies with video games.

   Social Studies, 106(1), 32-36. doi:10.1080/00377996.2014.961996

Mellecker, R. R., Witherspoon, L., & Watterson, T. (2013). Active learning: Educational experiences

   enhanced through technology-driven active game play. *The Journal of Educational Research,*

   106(5), 352-359. doi:10.1080/00220671.2012.736429

ÖZDEMIR, O., & ÖNER, I. E. (2015). The effects of simulations and animations on students'

   motivation in a computer course. *Participatory Educational Research, *, 53-59.

   doi:10.17275/per.15.spi.2.7

Stone, S. J. (1993). Taking time to teach social skills. *Childhood Education, 69*, 194+.

   Sumtsova, O. V. 1., Azhel, Y. P. 1., & Buyankina, A. S. 1.,. (2016). Webquest-based role play as

      a way of raising students' motivation to studying foreign languages. *International Journal*

      of Emerging Technologies in Learning, 11(3), 63-66. doi:10.3991/ijet.v11i03.5100