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## What Scaffolds Good Technology Teaching and Learning?

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## What Scaffolds Good Technology Teaching and Learning?

### Abstract

"Within a six-week full time practicum experience, these candidates put their own personal philosophies of what it means to educate a student alongside their own presuppositions of how an increasingly digital classroom may improve or deter learning."

### Keywords

teacher candidates, technology, philosophy, perception, culture

### Cover Page Footnote

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## What Scaffolds Good Technology Teaching and Learning?

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On the cusp of a pandemic in the winter of 2019, while engaging a course on intentional teaching and pedagogy in a foundations of education course, five teacher candidates discussed the assumption that improvement in student learning would be a result of the use of technology in the classroom. These students explored classroom learning in order to see if intentionality and a personal philosophy about what education is for within technological use in the classroom emerged within actual practice.

Within a six-week full time practicum experience, these candidates put their own personal philosophies of what it means to educate a student alongside their own presuppositions of how an increasingly digital classroom may improve or deter learning. Using an ontological narrative approach (Pace, 2009; Caine et al., 2013), coupled with the importance of dialogic narrative conversation, noted by Mikhail Bakhtin (1986), the experiences of candidates, classroom teachers, principals, and students unfold.

Ontological narrative as a method within qualitative analysis is not new. Educator John Dewey, in his work on experiential learning (as cited in Cain et al., 2013), described narrative ontology as experiences that are continuously interactive, resulting in changes in people and the contexts in which they interact. Due to this, they are seldom simple and linear, often coming to light in a serendipity moment within a conversation. This necessitates attention to what Dorothy Smith

(2005, 2006) would term the inner voices of those who work within an organization or ethnographical context.

Due to the importance of agency and voice in education, an ontological interpretive approach within a narrative context best informed these teacher candidates as they pondered the overarching question, What scaffolds good technology teaching and learning?

Candidates considered three question prompts for this research in order to enable an intentional approach for authentic learning. These questions investigated the requirements of the school, the personal intentionality and philosophy of the teacher, and the view of the student who receives the teaching. The questions and their order are as follows:

- What is the technological philosophy of the school? How is this communicated to teachers by the principal? Do teachers communicate this to students?
- Does the classroom teacher have a personal philosophy for using technology in the classroom? How and why is this applied to student learning?
- Does the student think technology is used to further learning?

The context for the study represented learning situations within eight different classrooms across the elementary school spectrum. The

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junior/intermediate (JI) grades included studies in French for two classrooms, and music in one, as well as some or all daily core subjects, while the primary grades (PJ) involved teaching full core subjects daily. The research spanned three different boards of education in the greater Toronto area in Ontario, Canada. A summary table of level and grade can be found in the following chart. It is noted that the teachers are not identified, but serve as an ethnographic/autoethnographic voice, in order to preserve anonymity.

**Table 1**

***Title: Overview of Participants and Grade***

***Levels for Teaching***

Grades	Subjects	PJ/K-4	J/I: 5-8
7 & 8	French & core		JJ
5, 6, 7	French & core		JJ
8	Language, Art & Music		JJ
1	All subjects	K-4	
K	All subjects	K-4	

Permission to conduct this research was granted by the Redeemer University research office via an internal teaching and learning grant. Although this is a small study, it is an important one, as it examines how the philosophy and epistemology of the teacher enables or restricts intentional teaching within the daily life acts of the school regarding the use of technology in the classroom.

This research is informed by the academic learning experience of the teacher candidates while in university, the personal philosophy of the teacher candidates on what education is for, their view of the student, their focus on student learning, and the precept that education is both informed and informs the greater life beyond the classroom. Their subsequent narratives provide a window into seeing if what is considered of value to a teacher candidate in their education, transfers

into discernment within actual teaching. This is helpful in confirming that what we hold dear as an educational belief does impact both our ideas of education and our delivery of it. This section now unfolds into a review of the literature, considerations of methodology, discussions, and conclusions.

**Literature Review**

Prior to reviewing the literature on teacher development, it is important to note that the aspects of teacher ontology, philosophy, and intentionality in teacher preparation are significant when inquiring into what scaffolds good technology teaching and learning. Training in teacher preparation enfolds the internal and external composites of what it means to be a good teacher. In Ontario, Canada, the location of this study, the Ontario College of Teachers (OCT) considers the character of the teacher to be worthy of note, as cited in the OCT publications of the standards of practice and ethics for Ontario Teachers (2019). Care, respect, integrity, and trust are required, in tandem with the standards of having a professional vision, identifying values, knowledge and skills, and using professional judgement. The social world and learning interweave within the education of a student. Sergioanni (2000) described the school community as being made of both system world (internal organization in which you work) and life world (socio-personal) components. Education is a life act, not a cognitive isolation of the mind. It is for these reasons that an ontological narrative approach was taken in order to mine the information for this research, and why teacher stories in narrative form are of importance.

The literature review centred on aspects of technology and its use in the classroom. Available literature at the time of this study revealed research within four key themes around technology and its use. Each of these themes added to the context of how, why and when to use technology in the classroom. These themes are: (a) pedagogical technique, (b) social/cultural experience, (c) decisions surrounding implementation of technology, and (d) the need for contextual training in teacher education. Data is grouped into themes emerging from the

literature review, in order to identify these within the narratives from the classroom.

A focus on models and tools for technological pedagogy featured in the first theme. Research by Brush and Saye (2009), Ersoy and Boskiurt (2015), Gilakjani (2013), Koehler et al. (2011), Salmon (2000), and Smart et al. (2013) examined pedagogy and practice. Practices noted by these authors targeted use of portfolios, whiteboards, games, language, and sequential cognitive development as being key to technology use in the classroom. These were, so to speak, the tools and mind maps of the trade. It will be noted that some of these themes readily emerged in classroom narratives. Findings from their research related to teaching from a mode to instill technique and individual efficacy in the classroom. Research exhibited what the technological tools and models can do, and how to improve schools with technology in order to become effective and efficient. Absent is the need to contextualize models, tools, and language within deeper meaning-making regarding the use of technology and its effects on the learner. Missing is the voice of intentional purpose of the school or classroom teacher.

This is important because technique alone will not take into consideration the intent, and context of interactions with students in the experience of learning (Briel, 2021). This omission of the dynamic between the school leader, teacher, and learner provides incomplete alignment with this specific study's interest of scaffolding learning towards an intentional end.

Research pertaining to the second theme, the social/cultural world of education, was found by Schlasberg (2021), Mercer et al. (2019), and Ruggerio and Mong (2015). Their research involved building classroom relationships or dialogue and aspects of student-centred practice. These components were seen to be significant, but this research did not inform or address the synergy between the teacher, school, student, and technology in the ways which would explore a narrative voice. For example, researchers "doffed their hats," so to speak, on the significance of social aspects, but not on the intentionality of thought to do so or the reasons behind doing so. In two of the three legs of a three-footed stool, the

teacher and technology were paramount, with the learner remaining mute. Aspects of these teacher/student narratives, when present, appeared to focus on individuality, rather than in a dialogical classroom mode of inquiry. This removed the significance of dialogic narrative that a narrative inquiry provides.

The third theme, decisions surrounding implementations of technology, and the fourth, on teacher education, both emerged in a paper by Baek et al. (2008). They considered how teacher experience affected decisions on using technology to support teaching and learning. This theme was closer to the idea of intentional learning and teaching. Their study found experienced teachers used technology as an involuntary response to external forces, rather than using it of their own will. In this research, the "why" question of intentional use of technology raises its head.

On improving teacher education, Hannafin and Savenye (1993), McKnight et al. (2016), Ross et al. (2010), Topp (2014), and Zhou and Augiton (2015) identified the need for contextual training and the suggestion to restructure professional development for teachers. Identifying technology with a connection to context and purpose was significant to our research.

Briel (2021) noted that technology has benefits for the learner in that it is self-paced, allows access for the disabled, is flexible and leads to cost reduction for students. In tandem, it also has the drawback of lower higher education completion rates (Parr, 2013), a lack of training prior to its onset for teachers and students, and the reality of Zoom fatigue. This paper provided a scope of affordances, both positive and negative, that included all participants in the study. The narratives emerging from the focus sessions brought forth the social concern of parents and educators regarding the amount of screen time per student age suggested for mental health by the medical association, and the unknown of how much children are online at home and school. Education engages and is affected by the social world.

The literature review suggests that technology is paramount in classroom use. Absent is a consideration of the intentional philosophical

aspects of the school principal, as head of the institution, the teacher in the classroom, or the voice of the student who is receiving technological implementation in the classroom. In planning our question prompts, the literature review framed significant aspects. It is noted that all of the aforementioned themes became reflected in the comments within the four focus sessions of this research. It is within these focus sessions that further comments will be made on the link between the literature review and the study within our narrative analysis.

## Methodology

### Situating Methodology

Before going into the narrative methodology, it is helpful to consider the aspects of ontology, epistemology, and the need for voice in this study. Interest in the educational use of technology and connection to the social elements of education, align well within the work of Smith (2005, 2006) and Gee (2005). These authors target the importance of authentic voice within any situational ethnographic context as a lens to authentic lived experience. It is here that the voices of the school, teacher, and learner obtain a sense of place. Dorothy Smith (2005, 2006) in her ethnographic research, sees peril in not attending to the individual voices in educational settings when she stated:

...[traditional sociology] interprets the everyday and local events in terms of a framework originating in sociological and political discourse. Its conceptual structure displaces people, displaces their activities, displaces the social relations and organisation of their doings. (Smith, 2005, p. 31)

Gee (2005) valued discourse analysis, noting that particular attention needed to be given to repeated language, key words, verbs, and themes in fully understanding what the individual means

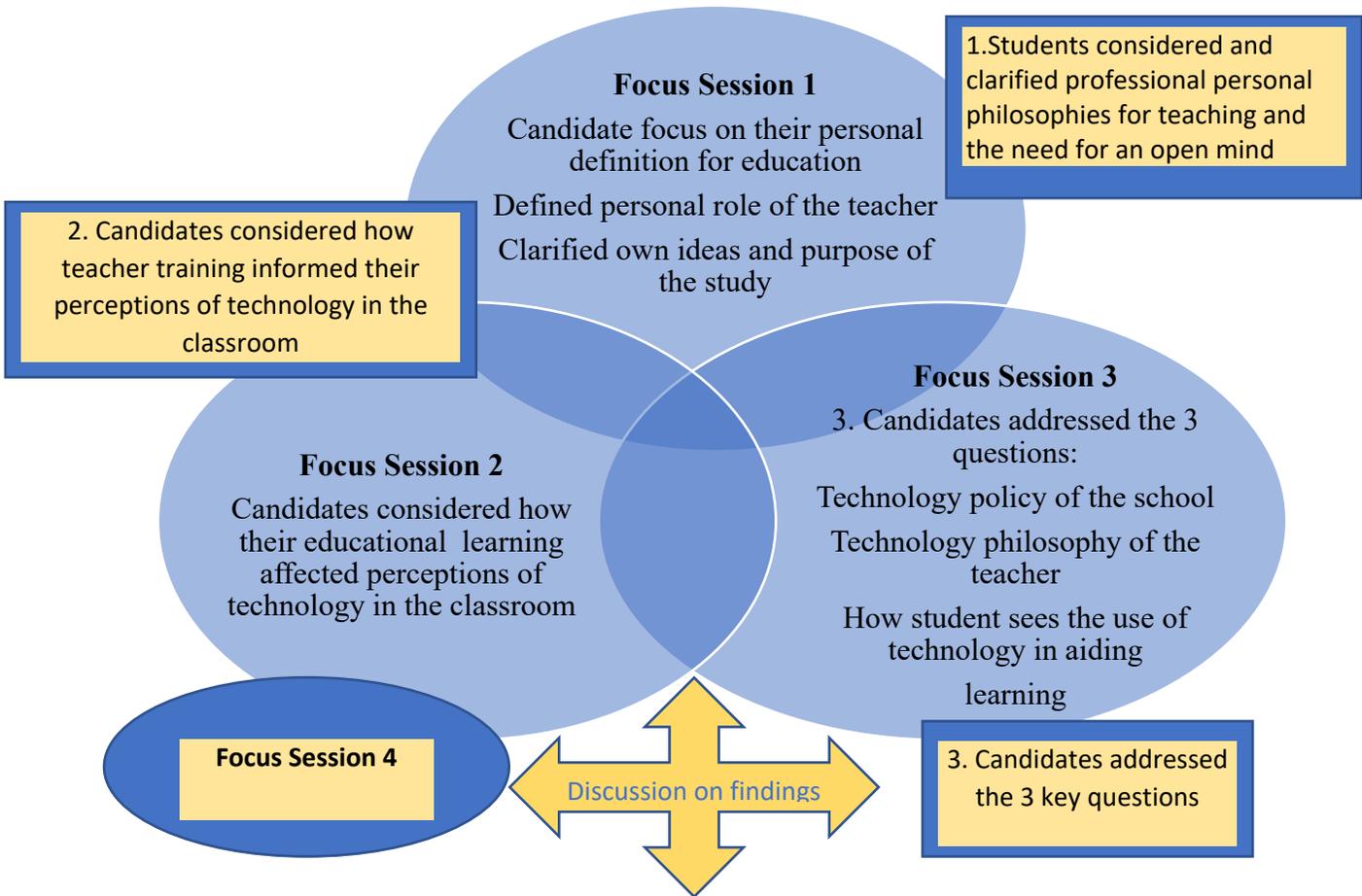
and values. For this research, these authors have been central to our analysis of narrative work.

### Context and Analysis for Methodology

For the voices of the teacher candidates, teachers, and students to be heard, their meaning is situated within their context and that of the teacher candidate working within that context. Transcripts of the conversations in focus group sessions during this study were recorded and transcribed so that each candidate had a different colour code for their comments and quotes, nested within their PJ and JI contexts. Direct comments were colour-coded for each student teacher and highlighted so they could be identified across all classroom discussions per grade. Comments were then noted by theme. Comments are incorporated anonymously into the findings and discussion sections of this paper. For anonymity, these were charted by the grade level taught. Of primary importance were the four face-to-face discussion sessions held with student candidates. Two of these focus sessions served to formulate and verbalize the ontological perspective for the education student.

Focus session one, prior to classroom practicum entry, had candidates revisit their philosophy of what education is for; providing each student with a personal plum line for viewing in the classroom. As one student noted, "Now I know why teacher education has a personal philosophy of education paper." Focus session two reflected on teacher training, courses, and forming perspectives regarding technology from their own teacher education. Focus session three occurred after three weeks of acclimatizing to the school, classroom, and students, and considered the key questions of the study. In focus session four, students met to discuss and clarify final findings and outcomes.

The following figure provides a visual of how the four focus sessions unfold during the six weeks of the student practicum experience, and the two weeks prior to entering the classroom.



**Figure 1: Focus sessions during the study**

**Narrative Data and Discussions**

**Focus Session 1**

In understanding the narratives of others, it is helpful to understand your own. This was the purpose of focus session 1. Candidates in this study emerge from a Christian teacher education program, and therefore, their faith infuses their perspectives of life. Clarifying a personal philosophical and ontological stance before starting the research enabled each candidate to be able to identify changes in their own perceptions as they experienced the reality of the classroom. This supports a statement by Parker Palmer (2000): “Before you tell your life what truths and values you have decided to live up to, let your life tell you what truths you embody, what values you represent” (p. 3). Having a goal of what it means to educate a student informed a priority of keeping the student learning intentional and central. Additionally, it connected each candidate’s desire

for life-world application. In discussion, these students formed a communal definition of “being educated” that aligned with their worldview of being fully human:

A teacher’s job is to lead and influence kids in becoming fully human by helping them make decisions. These skills [technology] will come to you because you live in the world, but you must first know how to live in the world and then you can learn these things once you know because this is the higher thing. (PJ/JI collaborative teaching philosophy)

The first session supported the reality that no researcher comes to research without a prior

perspective. It also confirmed that a definition of education flowed from the personal philosophical understanding and ontology of each individual teacher. As a team, they settled on a final definition for the purpose of their research.

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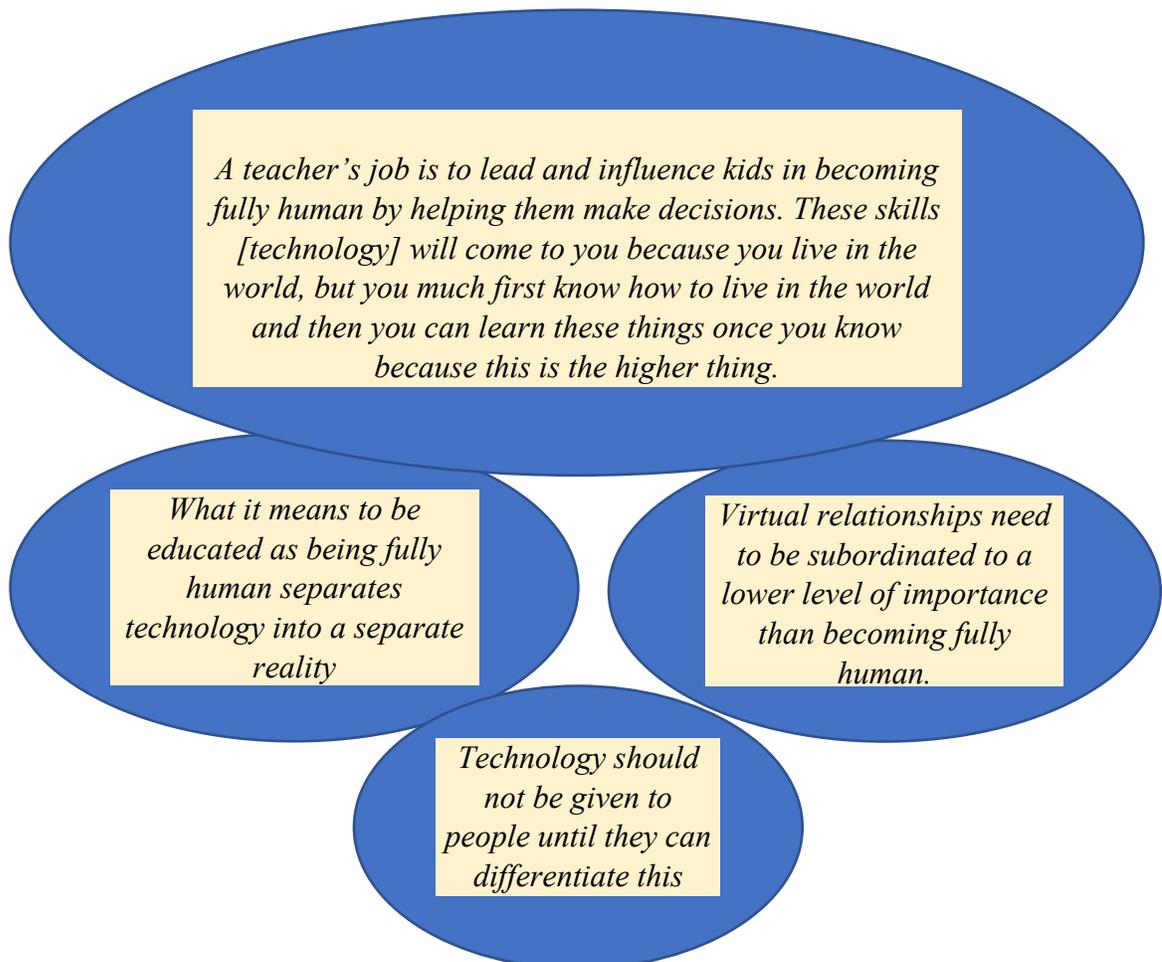
*I think the purpose of education is to make a person fully human; to be able to live in the world with other humans. Technology creates a separate reality. We are not technology. Virtual relationships need to be subordinated to a lower level of importance than becoming fully human. Technology should not be given to people*

*until they can differentiate this.*

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Narratives from each of the four focus sessions showed an interesting connection between the order of a personal philosophy on what it means to be educated and the reality in the classroom. In their philosophy, becoming fully human to engage the world was the main thing. Recognizing virtual reality should be subjugated in order of preference. This proved to be insightful and crucial to observations, especially in the final section of the study, when compared to the philosophy that emerged. In order to leave the narratives in context, quotes emerge as part of the discussion for each focus group session. Narrative inquiry is not linear and is sometimes messy as people tell their stories.

**Figure 2: Ordered thinking in a philosophy of education**



The second focus session occurred after the first three weeks that students were in schools. They entered this period of time with past course content informing them. Their narratives are incorporated in these findings, where the numbers following the anonymous quotes signify grade level.

Candidates recognized that their teacher training included readings and discussions on the use of technology in the classroom (Postman, 1993; Shermer, 2018; Turkle, 2016; Twenge, 2017), and felt that was helpful in having them integrate learning with a purpose and a plan for its use. More importantly, it helped them to know themselves in relation to using technology both as a teacher and receiving it as a future teacher.

As digital natives, technology is part of this generation's lifestyle, and candidates said that making them aware of the use of technology in learning was helpful for deciding when it was most beneficial and when it was not. They discussed changes in their own emerging adult personal habits (i.e., removing technology from the bedroom at night, for example), assisted them to consider how much they used technology and how much it used them in mindless ways to be more connected to it than they needed to be.

One of teacher candidates (K-1 grade level) in this session observed how technological use of videos in the classroom did not help students remember the content in ways that would assist them in applying it. There was discussion on what one JI

participant perceived to be a lack of creativity and imagination in the junior grades, where one classroom made heavy use of videos and iPads, and computer games like Kahoot. An example in the primary grades was very specific:

Grade one students were to print a sentence. They were then to type it on their iPads, which took them three times as long. This was very overwhelming for most of the students, and I felt teaching them to write a sentence and commending them for being able to do it, (it was about a picture they drew), would be more satisfying, and less a waste of time. (1)

This led to a discussion on the best reason to use technology pedagogically considering outcome, applying backward design (Wiggins & McTighe, 1999), and not just to use it because it was there. A junior grade teacher also commented on the demise of small motor skills in her students: "My teacher commented on the fact that in her grade 6 class, students did not know how to hold a pencil properly, and their writing was almost indecipherable" (5/7).

Technological devices were often used as rewards – i.e., "When you get your work done you can have ten minutes on an iPad" – and this produced rushed, shoddy work in order to guarantee iPad use instead. Another candidate noted that with one Autistic student on the ASD spectrum, the teacher tended to use the iPad to keep the peace, and to remove him from the direct teaching venue so he did not disturb others. There was some discussion as to whether in an inclusive classroom, this was a form of exclusion, or a necessity.

These musings led the candidates to believe that a philosophy or policy for the use of technology as it related to authentic learning should be a responsibility of the principal to communicate such a policy to teachers. Candidates also realized that most teachers were not trained in the art of using technology, "when it was best to teach with it" (7/8), and not just because it was there. Technology was engaged to see what children could do but did not relate to what they could become when it was not available for their learning. It was also noted that when the iPad table was not plugged in overnight, or when disruptions in service occurred, it wasted a lot of learning time.

Primary teachers noted the time involved on taking photos of the children in class doing work. Upon inquiry, they found that principals wanted the pictures they were taking to show parents what was happening. It was a good promotion for the school, and assisted parents in seeing what was done at school daily. One of the candidates (5-7) queried, "I wonder why agendas are not enough. Everyone takes one home and parents can find out there what they did in class." Another participant (5-7), who is also a parent of school

age children, expressed that she found it annoying to get photos sent to her so frequently. Seeing her child looking happy did not equate to learning in her mind. She was more interested in talking to her child about what learning was occurring in school or reading the agenda to discover what was lacking or not lacking educationally in her child's subject experience. She said all the communication could be very disruptive inside and outside of the classroom. If she needed to be contacted, she would rather be phoned. The others, who were not yet parents, noted that they had never considered the parental perspective. That also led to some discussion about parents phoning children at school, and vice versa, which could prove a troublesome interruption to both teachers and students. Most of the work in the primary classrooms required concrete examples and manipulatives, interactive instruction. Candidates felt this was of benefit in getting to know the identity of the student. It also assisted the children in learning how to socialize and listen to each other while problem solving, with geo-boards for example, where they could manipulate the process physically. One point of note was that both teachers in the K-I classrooms were constantly taking pictures with their iPads of the children during learning, and the students and the teacher were often distracted by this task, which was quite time consuming. One candidate mused:

I learned new things, [about what programs were out there] but [at PJ level], I do not really want a lot of technology in the classroom. Young kids spend so much time on the screen [at home].... I notice kids are more anxious and less confident. (K)

My cousin, a doctor, was recently talking about recommended TV time being different between ages, and finds it hard to take her 3-year-old away – why do schools not consider this? (1)

This statement introduced the reality of parental concern, surrounding how children connect to society and others in an age-appropriate way.

The PJ teachers in K and grade 1, felt that:

Since students learn how to be people who interact with others in the early grades, perhaps technology should be

limited to a specific and intentional educational purpose - for instance, fitness videos in the morning were one example noted for the exercise program.

This would engage students with technology while learning a physical skill, setting the stage for seeing technology as part of learning in later grades. (2)

This proved to be true in our study.

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*For many of the subjects, candidates found learning to have more ownership by the student without technology, such as in math where concrete manipulatives were often used to solidify concepts into memory. Candidates in the PJ context felt it likely that technology would be used more frequently in JI classes, due to the ability of the students to work more independently, and the age and attention span of the individuals.*

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In the JI classrooms, all candidates noted the use of phones during some modes and subjects of instruction:

I have seen on placement that kids bug the teacher to go on to a program like Math Prodigy, but then I always found them on something else, and I saw that when a student was supposed to be using her phone for research, she was taking photos of the class and sending them to her mom.... (5-7)

Another reported: "I see that every time you ask a kid a question they go to Google or YouTube on their phone. They do not use books or dictionaries" (French, 8). This was also noted in social life in general by both students and candidates: "I notice my friends just believe what they read and cannot see how anyone can have a second opinion" (1).

These comments demonstrated the lure of technology supersedes age. Candidates noted that, even as adults, the lure to be browsing or distracted while on a digital device was a reality. The social concern of safety was also raised in context with the pervasive presence of technology: "Nowhere is safe anymore, as bullying can follow you on the cell phone – tech is everywhere" (5-7). Because it is everywhere invasively, there is a burgeoning reliance on technology.

Comments also included some conversation regarding the cultural worldview toward social transhumanism, a worldview that says being human is not enough. Humans need to be technologically modified (Gay, 2018). These concerns were related to candidates' personal philosophies on becoming fully human.

Candidates recognized the benefits of using video technology in subjects like French, to visit Paris online, view authentic conversations, create commercials as projects, etc., and in science, to view experiments or natural phenomenon and weather, as well as to connect to other countries in social studies.

The Pavlovian response to the pings and alerts from phones were recognized by candidates as a great deterrent to attention. Phones were directed by the teacher to be used for specific subjects and tasks, but often the candidates noted that what they were to be used for was not what the students were viewing. Since a teacher would hardly be able to view 25 individual phones, for example, this was not surprising, but it did provoke some discourse on when and where they could be profitably used for direct instruction. One student pondered whether phones really needed to be used at all, since the distraction factor was so great it appeared to outweigh the gain.

### Focus Session 3

During focus group 3, the key questions for the study were posed to the teacher in the classroom and to the student recipients of the learning. Candidates asked teachers: (a) What is the tech policy of the school? (b) What is the classroom teacher's personal philosophy for using

technology? Students were asked, (c) Do you think using technology helps your learning? Responses from teachers were charted and are represented here as findings from discussion. One thing to note in this group session was that answers to these questions did not always ensure consistency between schools. Of five schools in the study, only one school had a technology philosophy or policy – no phones in the classroom. Students in JI were allowed to use phones in the classroom when they were part of instruction for the school, even with the no phone policy. In the other four schools, students appeared to have their phones handy most of the time, unless the teacher directed otherwise.

The other four schools in this study, to the knowledge of the classroom teachers, had no school policy for using technology, and the candidates felt that these schools likely preferred screened access and blocking of sites of view as being sufficient. This was a surprise to the teacher candidates in both the PJ and JI grades, considering the emphasis education in schools put on the increasing use of digital learning. Although this fit the criteria of limiting access to technology, it was not really a policy on considerations of when and when not to use technology in learning, and there was no communication of this to the classroom teacher. The presence of technology was seen in the same light as a new whiteboard replacing the old chalk board. It was a device, but its implications were not fully expanded to incur instruction on its interaction with the learning of the student.

When candidates asked teachers if they had a personal philosophy for when to use or not use technology, none of them could voice a response. Some said they liked or disliked it in the classroom, but their comments did not link to furthered learning on the part of themselves or the student. They did know when they did not find technology helpful (i.e., when students were not doing what they were supposed to do with a device), or when the students were not being attentive in class due to the distraction of other devices. Candidates did voice that all teachers recognized that they competed with technology for attention when its presence increased in the classroom.

The most interesting observations came from Candidate interaction with students. The numbers following the comments represent the grade of the student.

Most of my students in grade 7 would prefer not using technology in the classroom because it is distracting and they like it for games, so this does not fit with education as we think of it. (7)

Students recognize they spend too much time on technology (iPad searches, etc.) ...FSL strategies at my school still favor face to face conversation to speak and understand French. [When students use Google Translate – students are often incorrect in proper spelling, accents, etc. [since context is not considered in search engines]. (8)

Most of my students view digital tech use as “edu-tainment”; not as authentic educational learning. They play Fortnite and video games at home and watch Netflix. Whenever they can be, they are on their devices. ... One of the drawbacks to constant use of digital devices is the heavy reliance of it to do lessons or work. Some students find it difficult to manipulate the technology and it can take time away from their learning both inside and outside the classroom – and this can be the same for teachers. (8)

Students notice they become anxious or aggressive if online too much in a day. (8)

computer (5-7). He was given an iPad as soon as he got home. He could get around all the filters at school and home and used the iPad for things other than research or learning most of the time when at school. Another candidate noted that a student in her class was always searching for the iPad, and had a tantrum if it could not be found. These observations were related to an article (Shermer, 2018) we read between focus sessions, showing the link between how teaching from within a social awareness could help both teachers and students navigate or recognize life skills and perseverance skills, such as delayed gratification, for future adulthood both inside and outside of the classroom.

A discussion on the use of picture taking in the primary grades also led to a professional discussion on professional conduct and privacy issues. Should classroom photos be sent home or elsewhere, or viewed on school sites? Classroom teachers were also exhibiting high reliance on technology, i.e., checking their phones, etc., during class, which detracted from professionalism. Candidates also discussed the Canadian Medical Association advice for screen time daily at age levels, questioning if schooling and home saturated and exceeded these safe parameters. The candidates themselves also commented on how much poorer their vision was with so much screen time, and how tired they were after being online.

#### **Focus Session 4**

The social and personal impact of technology on human life was also a point of concern. One candidate said she was in a restaurant and saw a couple talking to each other on their phones, even when they could talk face to face across the table. One other emergent topic not previously considered at the onset of this study was how the home life and students on the ASD spectrum were being affected socially by technology in positive and negative ways.

One teacher in JI noted that one of her students with ASD spent school and home time on the

## Conclusion

In considering their learning, the teacher Candidates felt that the following suggestions may be useful regarding technology use in the classroom.

- All teachers should be aware of their own philosophy for education and using technology before they enter a classroom as it will inform their choices in using technology.
- The biggest problem you will have with teaching students is to compete with technology for their attention.
- Use technology wisely for learning purposes where it enhances learning in meaningful ways. Do not do something with technology if you could do it more creatively without it.
- Read books and articles about the social aspects of technology as well as those in your vocational discipline.
- Remember teachers teach humans; we do not go to schools just to amuse students but to educate them to be fully human intellectually and socially.

In summary, we are sure these Christian teachers will be better educators because of this experience and inquiry into the questions they found significant. It also emerged that having a philosophy of education for teaching is more powerful than one may think. Even though this study is small, the focus on intentionally being fully human as a teacher and a student is key to its essence, no matter where one may teach. Technology is a gift that must be wisely used by educators, or it could, as one candidate stated,

lead to easily becoming a lazy teacher who uses technology to think with their eyes, rather than who encourages creative, thoughtful, and purposeful learning.

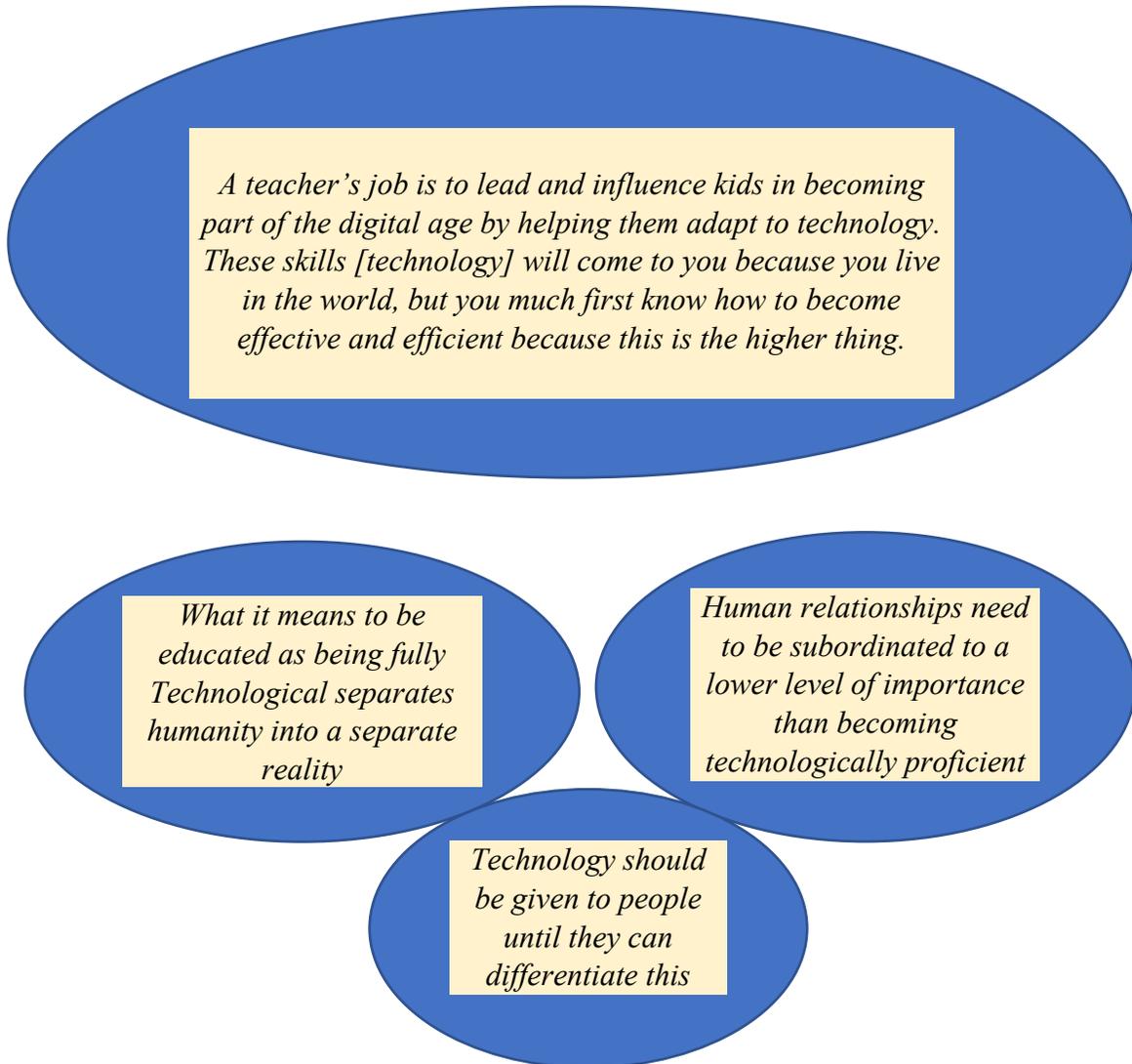
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*Findings from this study revealed the divide between theory and learning. Even if newer teachers in teacher training were informed about the larger pros and cons of facilitating technology for learning, this learning may not filter down into practice. It became evident that more attention to training not simply in how to be technological, but in how to think wisely about using technology as a learning tool would be helpful to new teachers.*

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One final insight came from their focus on a personal philosophy, shared in focus session one in this paper. When technology was increased to a point where it was central to learning, the students saw this philosophy for teaching emerge. From their original stance on why they educate in focus session 1, we found this philosophical switch quite sobering as a virtual philosophy of education. When being fully human is displaced with being technologically efficient in a digital age, the following philosophy emerges:

**Figure 3: A Virtual Philosophy of Education**



This perception reveals that our philosophy of education could be reversed if accommodated to a transhumanist perspective on education (Gay, 2018). Presenting from a device is addictive and was designed to be addictive. In the absence of

purpose, the overuse of, or abuse of technology, could inadvertently lead to a very mechanical teacher; perhaps deadening the creative need for deep reflective thought. At that point, technology could remove the purpose of education and eventually kill the ontological and educational heart of the teacher.

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