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Abstract

Students and teachers engage in specific roles in classrooms, and within inquiry classrooms, these roles tend to be more varied compared to traditional settings. Teachers may take on traditional student roles including the role of learner, and students, for example, take on the additional role of question asker, traditionally reserved for the role of a teacher. Several of these roles are specific to perspective taking, in particular, social perspective taking (SPT). SPT is critical to successful social interactions and, because group work occurs frequently within inquiry-based teaching and learning environments, a better understanding of SPT roles is required. SPT roles within two different inquiry classrooms were closely examined through audiorecorded group interactions. Additional data were collected in the form of questionnaires, interviews, student and teacher log responses, and field notes. Two teachers and eight students participated. Social perspective-taking roles were dynamic and susceptible to influences including the nature of the classroom activities and instructional choices, student personality differences, and group-work dynamics. All participants adopted SPT roles, however, students who played an active role in choosing their work partners and who were assigned a task that required a consideration of the audience's understanding tended to adopt more Imagine Other roles as opposed to Imagine Self roles and also adopted more emotionally-based SPT roles compared to students in teacher-formed groups who were assigned more cognitively-based assignments. Implications for researchers, consultants, and students and teachers were discussed.

Keywords: perspective taking, social perspective taking, inquiry, role diversification, roles

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El Ojo del Espectador: Investigando la Interacción entre la Diversificación de Roles de Indagación y la Toma de Perspectiva Social

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Resumen

Alumnado y profesorado participan de diferentes roles en las aulas y dentro de aulas basadas en la indagación, estos roles tienden a ser más variados en comparación a entornos tradicionales. El profesorado puede asumir roles de estudiantes tradicionales, incluyendo el rol de aprendiz, y el alumnado, por ejemplo, asumir el rol de hacer preguntas, que tradicionalmente se ha reservado al rol del profesor. Muchos de estos roles son específicos a la toma de perspectiva, en particular, la asunción de la perspectiva social (SPT). SPT es fundamental para las interacciones sociales de éxito y, dado que el trabajo en grupo ocurre frecuentemente en entornos de aprendizaje basados en la indagación, se requiere una mejor comprensión de los roles SPT. Los roles SPT en dos aulas basadas en la indagación se examinaron en detalle a través de grabar las interacciones de grupo. Más datos se recogieron a través de cuestionarios, entrevistas, respuestas largas de estudiantes y profesorado y notas de campo. Participaron dos profesores y ocho estudiantes. Los roles de toma de perspectiva social fueron dinámicos y susceptibles a influencias incluyendo la naturaleza de las actividades de aula y las elecciones instruccionales, las diferencias en la personalidad de las y los estudiantes y las dinámicas del trabajo en grupo. Todas y todos los participantes adoptaron roles SPT, sin embargo, las y los estudiantes que tuvieron un rol más activo en la elección de sus compañeros y compañeras de trabajo y a quienes se les asignó una tarea que requería la consideración de la comprensión de la audiencia tendieron a adoptar roles de Imaginación de las y los Otros en oposición a roles de Imaginación Personal y también adoptaron más roles SPT basados en las emociones en comparación a estudiantes en grupos formados por profesorado a los que se les asignó actividades más basadas en la cognición. Se analizan las implicaciones para personal investigador y asesor, alumnado y profesorado.

Palabras claves: toma de perspectiva, asunción de la perspectiva social, indagación, diversificación de roles, roles

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Inquiry-based teaching and learning environments are distinctive learning settings, based on social-constructivist principles. Inquiry refers to "making observations; posing questions; examining books and other sources of information to see what is already known; planning investigations; reviewing what is already known in light of experimental evidence; using tools to gather, analyze, and interpret data; proposing answers, explanations, and predictions; and communicating the results" (National Research Council, 1996, p. 23). Lee (2012) referred to inquiry-guided learning as active learning involving inductive teaching and learning methods. Student choice is also central within inquiry (Aulls & Shore, 2008; Clark & Shore, 2004).

A core part of inquiry involves social interaction. Aulls and Shore (2008) described how the classroom culture is jointly constructed by teachers and students. Shore, Birlean, Walker, Ritchie, LaBanca, and Aulls (2009) provided a list of characteristics essential to inquiry literacy and several pertain to social interactions or collaboration, for example: shared goals, co-owning knowledge, listening and discussing respectfully, communicating clearly, asking relevant questions for an appropriate audience, seeking advice from adult or peer mentors effectively, organizing information for interpretation by self and others, positively valuing collaboration, and sharing the results of inquiry with others. For example, Emily, a hypothetical inquiry student, is working in a group on a poster about what can be made from recycled materials. As she researches on the computer, she finds an interesting fact about how recycled glass is crushed and then mixed with road paint to create greater reflectivity of lane markings at nighttime. After excitedly showing her group members, she asks the teacher if she can come up to the front to share this fact with the rest of the class. Emily not only has choice in terms of what particular aspects she researches, but she is also seeking to share her knowledge with others.

Aulls and Shore (2008) also recognized that teachers adopt learner roles and vice versa. Teacher roles can be defined as "actions, verbal interactions with students, and responsibilities undertaken to support students' participation in components of inquiry such as projects, experiments, laboratories, hypothesizing, data collection, data analysis, dialog, theorizing, debate, argument, and evidential reasoning" (Aulls &

Shore, 2008). Role exchanges among teachers and students and among students have been conceptualized in inquiry as role shifts. Crawford (2000) coined the term "collaborative inquiry" to refer to instruction that involves "cognitive interactions between teacher and students with members of the community" (p. 933). Collaborative inquiry requires different roles from a traditional classroom and Crawford acknowledged that roles traditionally reserved for a teacher (e.g., knowledge provider) are commonly adopted by students in inquiry-based teaching and learning environments. Students take on a wider range of roles, requiring more complex and active involvement by the teacher. Therefore, roles traditionally reserved for students are adopted by teachers (e.g., listener). Collaboration is the primary method of developing conceptualizations of knowledge through a process of shared learning.

Walker and Shore (2013) suggested that role shifts or exchanges could, in fact, be better described as a process of role diversification and proposed a model that included four different phases. Each phase exists along a continuum with no clear-cut boundaries between any two phases. The Exploration phase involves learning implicit and explicit school and classroom inquiry rules, which tend to differ from those in traditional classrooms. These differences can lead to initial challenges for students. The Engagement phase involves initial participation as an inquiry student. Students learn the specific and nuanced obligations of functioning as an inquiry student, however, conflict can arise when traditional student expectations clash with inquiry expectations, for example, disagreements among learners can be common within inquiry settings and are not necessarily entirely disadvantageous. Stabilization is the third phase and involves committing to one's position or role as an inquiry student. The final phase of Diversification involves adopting numerous roles within the classroom, for example, Reasoner or Explorer. The length of phases is dependent on context, individual differences, and levels of scaffolding.

Role diversification involves not only social interaction but many of these roles also require perspective-taking skills. In fact, what we now call perspective taking was originally referred to as role taking. Selman (1971) described how role taking involves understanding other individuals' capabilities, attributes, feelings, and expectations, or the

ability to see the world from a different perspective. Selman and Byrne (1974) proposed four stages of role taking with each stage indicating the attainment of more complex or advanced perspective-taking skills. These stages move from Stage 0 (zero) or egocentric role taking, to subjective role taking, followed by self-reflective role taking and finally, mutual role taking. Selman (1980) later added a fifth stage to acknowledge the influences of deeper communication, expectations, and awareness and changed the terminology of the stages from role taking to perspective taking.

The research question for the current study was: What is the relationship or interplay between SPT skills and the adoption of numerous roles within inquiry classrooms? The different forms of perspective taking will be described, followed by a type of perspective taking that applies well to classroom settings, that of social perspective taking. To address the research question, data were collected from two different classrooms. Comparisons between two small working groups were primarily based on SPT roles identified through transcripts of audiorecorded dialog.

Types of Perspective Taking

Perspective taking falls under the broader category of theory of mind and notably involves placing oneself in another person's proverbial shoes to understand what and how that person is thinking and feeling (Berk, 1989). Chandler and Helm (1984) concluded that preschool children are egocentric (Piaget, 1954) and are therefore rarely able to take the perspective of someone else. Seven-year-olds also tended to exhibit egocentrism, particularly when the experience was not shared. By the age of 11, children rarely if ever exhibited egocentrism. Young adolescents have cognitive skills that continue to mature, and these skills allow for perspective taking, even if the perspectives are unfamiliar.

At least five different types of perspective taking have been identified in the literature including social (Johnson, 1975), conceptual (Pillow, 1989, 1995; Selman, 1971; Taylor, 1988), academic (Gehlbach, 2011), affective (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991), and perceptual, visual, or spatial (Flavell, Everett, Croft, & Flavell, 1981;

Flavell, Flavell, Green, & Wilcox, 1980; Masangkay, McClusky, McIntyre, Sims-Knight, Vaughn, & Flavell, 1974; Pillow, 1989; Rosser & Lane, 1993; Selman, 1971; Tarshis & Shore, 1991). Among these five, social perspective taking was the primary focus for the current study.

Social Perspective Taking

Based on the different types of perspective taking listed above, social perspective taking is the most relevant to classroom or group settings because classrooms are social settings that provide numerous opportunities for individuals to interact in cooperative or collaborative ways. These interactions require a certain degree of social perspective taking.

Social perspective taking (SPT) is defined as "the ability to understand how a situation appears to another person and how that person is reacting cognitively and emotionally to the situation. It is the ability to put oneself in the place of others and recognize that other individuals may have points of view different from one's own" (Johnson, 1975, p. 241).

There are several related conceptualizations of SPT including interpersonal negotiation (how individuals meet personal needs during interactions with significant others during conflict or disagreement [Mischo, 2005; Schultz, Yeates, & Selman, 1989]), empathy (contains an emotional component in addition to the cognitive component of perspective taking [Davis, 1983; Stinson & Ickes, 1992]), and interpersonal sensitivity (ability to use nonverbal cues to correctly judge abilities, traits, and states of others [Carney & Harrigan, 2003]). Empathy and interpersonal negotiation will be discussed because they were directly incorporated into the data collection tools for the current study.

Batson, Early, and Salvarani (1997) outlined two forms of SPT including imagining another person's perceptions and feelings about a situation (imagine other) or imagining one's own perceptions and feelings if placed in that same situation (imagine self). The former, in particular, requires a certain degree of role shift or diversification. Abele and Wojciske (2007) similarly determined that social judgements

involve two dimensions, agency and communion. Agency referred to social-information processing related to the perspective of self, and communion related to the perspective of others.

Other approaches to studying perspective taking have included examining both cognitive and emotional components. For example, Bernstein and Davis (1982) administered the *Interpersonal Reactivity Index* (IRI) self-report questionnaire (Davis, 1980). The IRI examines cognitive (taking another's perspective and fantasizing) and emotional empathy (feeling compassion or personally distressed for others). Individuals who scored highly on the IRI were more accurate on a task that asked individuals to view subjects on a video tape and then match these subjects with three-word self-descriptions. Therefore, frequently adopting another individual's perspective will lead to more accurate stereotypes.

More recently, Gehlbach extensively studied SPT and proposed a multidimensional approach based on Richard Snow's (1996) conceptualization of aptitudes. Gehlbach (2004) recognized the motivational component of perspective taking in addition to the cognitive component and acknowledged that empathy research overlooks the cognitive component important to perspective taking. Gehlbach stressed the need to fully conceptualize social perspective taking by considering the propensity to engage in SPT, cognitive abilities, situational characteristics, outcomes of SPT attempts, and how outcomes impact other abilities including conflict resolution. Traditionally, SPT accuracy has been studied with tasks involving two individuals who are videotaped during an unstructured interaction. Afterward, each individual is asked to report his or her thoughts and feelings at certain points during the replay of the video, and then are asked about the thoughts and feelings of the other individual at these same points. Accuracy of SPT ability is compared based on these independent descriptions. Gehlbach concluded that higher SPT propensity should highly correspond to levels of motivation. Furthermore, individuals with better emotional regulation skills should similarly more often attempt perspective taking and show more accuracy, which can help facilitate conflict resolution. Gehlbach also concluded that a higher propensity for perspective taking might correspond to higher intelligence and that females may engage in SPT

more frequently than males. Gehlbach also identified features of SPT task designs that either facilitate or hinder SPT abilities (e.g., familiarity facilitates perspective taking).

Gehlbach, Brinkworth, and Wang (2012) defined a successful perspective taker as a perceiver who "must first be motivated to try to understand one or more targets and then must engage in a process that allows him or her to accurately ascertain the target's mental state" (p. 199). They investigated the specific characteristics that motivate individuals to engage in SPT because one's motivation to engage in SPT might be more amenable to change compared to one's innate tendencies for SPT. Through surveys, performance tasks (video task as described in Gehlbach, 2004), and semi-structured interviews, they determined that seven characteristics considerably influenced participants' motivation to engage in SPT, including targets or situations that are especially important to the participant, prosocial goals, a desire for situational knowledge, relationship goals, social influence, intrinsic interest, or a desire for self-knowledge. Three characteristics negatively impacted SPT motivation: a lack of energy, hubris, and cognitive load.

Social perspective taking in schools. School environments involve numerous ongoing interactions with several different individuals, making SPT skills very relevant. Hale and Delia (1976) administered a social perspective-taking task that asked university students to identify two situations from the past year in which someone they cared about had hurt them or disappointed them, or alternatively, someone whom they did not like had helped them. They were asked to describe these situations in detail including the other person's thoughts and feelings. Achieving a high score on this task involved setting aside one's own evaluative stance or attributional orientation. The *Role Category Questionnaire* was also administered that asked participants to produce written descriptions of one person they liked and one person they did not like. The number of interpersonal constructs produced in the descriptions was representative of cognitive complexity. Hale and Delia concluded that individuals who produced more complex interpersonal constructs showed greater cognitive flexibility and therefore ease in shifting attributional orientations. Shifting attributional orientations is similar to the process of adopting new roles during the process of inquiry role diversification.

Gehlbach and Brinkworth (2012) applied SPT to social interactions in school environments and proposed a taxonomy of SPT strategies. These strategies were categorized as inferential strategies or information-cultivation strategies. Inferential strategies involved using available information to make inferences, whereas information-cultivation strategies involved attempts to obtain additional information to make inferences. They concluded that certain strategies might be better suited to particular individuals, indicating implications for determining the most appropriate SPT approaches for different individuals in the classroom.

LaMare and Rubin (1987) referred to Piagetian theory when describing how perspective-taking ability develops as a result of interactions and exchange of information with others. Peer sociability was related to perspective-taking abilities, more so among Grade 3 students compared to Kindergarten students. A certain level of peer interaction was required to facilitate the development of SPT; however, minimal improvements were noted as this ability improved beyond a certain threshold. SPT skills did suffer if the levels of interaction were below the threshold. Kohlberg (1969) proposed stages of social-personality development and determined that one of the first prerequisites for role taking is participation in a group. This group participation provides role-taking opportunities that facilitate moral development.

Gillespie and Richardson (2011) examined social perspective taking within cooperative activities and how exchanging roles or social positions may allow the other individual to experience the role demands for that person, therefore leading to less divergent perspectives. Gillespie and Richardson differentiated between cooperative and collaborative activities by describing how cooperative activities require a division of labor among members who adopt different social positions. Furthermore, cooperation is required when faced with individual differences. Collaboration, on the other hand, entails working together without differentiated roles or responsibilities.

The theory of position exchange was defined as different from perspective taking because cognitive perspective taking involves imagining another's perspective without experiencing that situation directly. Position exchange, however, refers to experiencing the situation

of another person directly, as is the case when adopting or exchanging roles during a cooperative activity. They hypothesized that exchanging positions or roles would lead to greater perspective-taking skills during a cooperative problem-solving task called the Communication Conflict Situation by Blakar (1973). In this task, two individuals were provided with identical maps; however, only one had a specific route outlined on it. The individual with the outlined route took on the role of Director, while the other person took on the role of Follower. This cooperative task required the Director to communicate the exact route to the Follower, who had to draw this route on his or her map. Each participant was not allowed to see the other's map; however, no other restrictions were placed on communication. This was repeated for three trials and then a conflict situation was introduced that changed a road on the Director's map slightly compared to the Follower's map. Control conditions had participants maintain their same role throughout four trials, however, in the position-exchange condition, Director and Follower roles were switched for the second trial before reverting to the original roles for the remaining two trials. Position exchange was determined to have a very powerful impact on perspective taking during the cooperative task. In other words, no pairs successfully completed the task in the control condition but 55% of the pairs were successful in the position exchange condition. They hypothesized that position exchange reduced power asymmetry through the exchange of Director and Follower roles, or as a result of self-attribution theory and the increased tendencies to blame the map instead of the person. Concerns related to how this manipulation may have simply facilitated cognitive perspective taking and therefore exchanging positions may not have had an impact.

In a second experiment to address this potential confound, the position-exchange condition involved alternating roles across five trials. A cognitive-perspective-taking condition was also introduced that asked participants to attempt to understand the task from the other participant's point of view in terms of thoughts, feelings, and expectations. Position exchange still had a powerful impact on perspective taking beyond the possibility that this effect was the result of priming cognitive perspective taking. In other words, there was no significant difference in successful outcomes on the task between the

control condition and the perspective taking condition, however, there were significantly more solutions in the position exchange condition compared to the control condition and the perspective-taking condition. They also determined that exchanging roles twice was more effective than exchanging roles once. This relates well to an inquiry classroom because roles are continually exchanged and adopted, perhaps facilitating the development of social perspective-taking skills.

Barfurth and Shore (2008) examined social perspective taking within role exchanges when they studied groups of four students working on science tasks. These tasks required students to build a working Lego model to demonstrate mechanical advantage. Groups were purposely organized to include strong-willed and soft-spoken members. Two different categories of discourse were identified including social moves and cognitive moves. Social moves involved discourse within the group, and cognitive moves occurred when one individual made a decision based on another member's suggestion. During arguments or disagreements among group members, cognitive advances within the group were often dependent on a preceding social move. For example, one social move involved a more strong-willed member asking the group to consider one of the more soft-spoken member's ideas. This instance of social perspective taking involved a role exchange or diversification among the students in which one student adopted the role of moderator. In addition, although it appeared that the groups were arguing and not acting collaboratively, many of these disagreements facilitated knowledge construction.

Many disagreements in groups also relate to Orbell and Dawes' (1981) free-rider effect. A "free rider" is an individual who takes advantage of other's efforts in a collaborative group in order to minimize his or her own effort, while still reaping the benefits of the final outcome. A "sucker" refers to that other individual who puts forth the considerable effort.

Student interest is central to inquiry environments and this interest can have an impact on group dynamics. Gehlbach (2011) addressed student interest but also considered perspective taking. He hypothesized that activities facilitating perspective taking should inherently facilitate interest and engagement in social studies because perspective taking requires actively engaging in taking on the perspective of someone else.

Gehlbach differentiated between academic perspective taking, "taking the perspectives of the historical and cultural figures they [students] are studying," and interpersonal perspective taking, "taking the perspectives of their [students'] peers in class" (p. 311). Gehlbach also noted that these two forms will overlap and are not discrete forms. Suggestions were provided for ways to target those individuals who might be more comfortable with one form of perspective taking versus another, therefore allowing teachers to modify classroom activities accordingly, for example, including both forms of perspective taking (e.g., asking a small group to answer the question, "Why did this particular historical figure act as she did did?" p. 315). Other suggestions included highlighting the benefits of peers as valuable sources of knowledge. Exposing students to different viewpoints not only facilitates perspective taking, but also facilitates engagement and mutual connectedness. The consideration of peers as valuable sources of information is a central component of inquiry.

Research Rationale

Walker, Shore, and Tabatabai (2013) examined the process of role diversification within two different classrooms through dialog among two groups of four students interacting during inquiry-unit activities. The goal was to determine the nature and numbers of predominant roles as students and teachers worked through an inquiry-based unit of instruction. Student and teacher roles were identified and other qualitative information was gathered through questionnaires, interviews, and participants' log entries. Four different influences were examined in the context of these roles: classroom context, teacher personalities and teaching style, individual student personalities, and group dynamics. One conclusion related specifically to perspective taking and group dynamics and interactions. Specifically, the method by which the groups of students were created had an impact on the nature of roles in terms of social and cognitive roles. Those students who did not have a choice in the selection of their group members tended to experience more conflict and negative emotional roles. They also tended to adopt fewer perspective-taking roles, but this was also confounded by the nature of the task. The current study examined this conclusion in more depth and

further investigated social perspective taking within the same student and teacher sample. Although the current study did not allow for specific conclusions regarding direct influences on perspective-taking roles, several examples will be described that provide insight into the interplay between role diversification and SPT.

Methodology

The current study was part of a larger study examining inquiry role diversification and therefore an abbreviated methodology section is presented. For additional detail about the methodology, please refer to Walker et al. (2013).

Participants

Eight pupils and their parents, and two female teachers agreed to participate from an elementary school in a generally middle-class suburb of Montreal, Quebec, Canada, and all participants were English-speaking. Six pupils were female and two were male. Four females were in Grade 4, one female and one male were in Grade 5, and one female and one male were in Grade 6.

The Grade 4 class (referred to as Group 1; S1, S2, S3, and S4) was beginning their first complete inquiry unit on the topic of the environment. The Grade 4 teacher (Teacher 1 or T1) was beginning her third year of teaching and allowed students to form their own groups. The Grade 5/6 class (referred to as Group 2; S5, S6, S7, and S8) was also beginning their first complete inquiry unit on the topic of the structures of government. The Grade 5/6 teacher (Teacher 2 or T2) was beginning her 23rd year of teaching and she selected the working groups based on their personalities. T2 selected students with outgoing and opinionated personalities to hopefully facilitate interesting discussions and she also balanced the group by grade and sex.

Data Sources

Anderson and Burns (1989) highlighted how understanding human meaning frequently occurs through observations within naturalistic

settings, for example, pupils within a classroom. Research in classrooms should also include multiple or continuous observations with multiple forms of data collection (Turner & Meyer, 2000). The current mixed-method research (Cresswell, 2013) included several different forms of data to meet these criteria and ensure data triangulation. Triangulation of data was achieved through methods (interviews, audiorecorded dialog), document analysis (questionnaires, log entries, field notes), and sources (teachers, students, researchers, supervisors). Please see Figure 1 for an outline of the data collected.

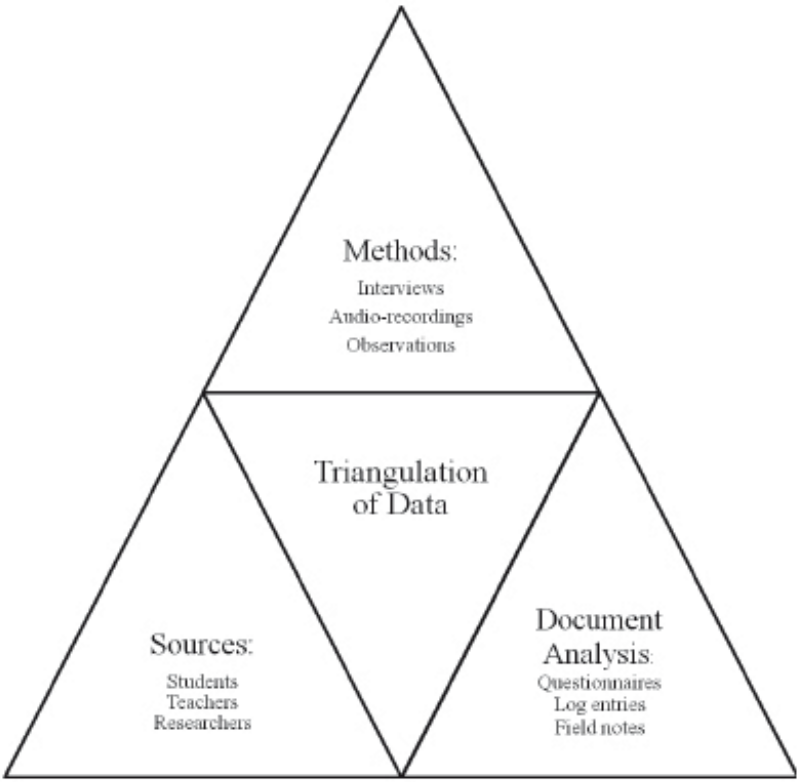

Figure 1. Data triangulation including methods, sources, and document analysis.

Audiorecorded student interactions. Student interactions within each group were audiorecorded, and then transcribed by Kei Muto, a volunteer student. The first author verified the transcriptions for accuracy and then imported the transcriptions into the MAXQDA computer software, designed for qualitative analysis (VERBI, 2011).

Field notes and researcher log. The first author took detailed notes at the end of every classroom visit. Information about classroom layout, attendance, the nature of the activity, teacher instructions, time of day, and duration of visit was recorded.

Student and teacher log entries. Teachers and students regularly completed very short journal entries and these journal entries were written responses to questions provided by the first author at the end of certain unit activities. Questions aimed to gather information about current thoughts, opinions, and attitudes regarding the learning environment. These data complemented and provided triangulation for the other forms of data.

Social perspective-taking task. An adapted social perspective-taking task was administered to each student in the group near the beginning and end of the unit to determine if perspective-taking ratings changed over the course of completing an inquiry unit (see Appendix A). If students had questions about any of the items, the items were verbally reworded to facilitate understanding.

This questionnaire combined different social perspective-taking tasks and examined interest and motivation as well as social perspective taking (Gehlbach et al., 2008). Demographic information was collected first, followed by an item that asked students to rate group-work frequency in the classroom. The next item asked students to rank a list of school subjects in order from most to least important. This item was followed by four different five-point rating scale items asking the student to rate how interested the student was in the current unit topic. Items were modified for each group depending on the topic of the unit (government or environment). The next three items contained five-point rating scales asking students to rank how often they attempt to figure out how another person might be thinking or feeling.

Davis's (1983) *Interpersonal Reactivity Index* was also incorporated into the questionnaire section; it consists of four subscales that examine different global aspects of empathy, including perspective taking. These

seven items were based on a five-point scale ranging from "does not describe me well" to "describes me very well," and asked students to rate how well they discern the thoughts and feelings of others (e.g., "I believe that there are two sides to every question and try to look at them both").

Interpersonal negotiation strategies (INS) interview. This interview examined interpersonal negotiation strategies, defined as, "the means by which one individual tries to meet personal needs via interaction with another individual, usually during conflict or disagreement within a relationship that has some personal meaning" (Schultz et al., 1989, p. 8). The first researcher studied the full interview manual prior to interviewing the students so as to increase the validity of the results, for example, to ensure appropriate question probing. Interviews were conducted in empty classrooms for the most part, however, for two of the tasks, teachers briefly entered the room. This interview was revised from the original due to time constraints (see Appendix B). Only two dilemmas were presented to each participant as opposed to four. Results from this instrument should therefore be interpreted with caution.

Reliability and validity. Coding descriptions were written for each code. These descriptions were revised for clarity and appropriateness multiple times through discussions with the second and third author, both very experienced with qualitative analysis; 284 lines of transcript were selected from 922 lines (30.8% of all codes) and these lines of transcript were coded independently by the first and third authors. The percentage of exact agreement was calculated at the more general level of coding to be 76.8%. Through ongoing discussions (totaling approximately four hours), 99.6% agreement was obtained at the more specific second level of coding.

For the interpersonal negotiation-strategies interview, the manual was consulted and used as a guide to score the transcribed interview responses. Two of the eight interviews were selected (25%) and were independently coded by the first and third author according to the scoring manual. The third author initially coded interviews according to the presented coding scheme and achieved only 39.6% agreement with the first author. The third author recoded the interviews based only on the scoring examples provided in the manual and 58.6% agreement was

achieved. Through discussions (totaling approximately two hours) that considered both the coding scheme and examples from the manual, 100% agreement was obtained.

According to Lincoln and Guba's (1985) trustworthiness of qualitative data analysis, the principles of credibility, transferability, dependability, and confirmability were also met. For more detailed descriptions, please refer to Walker et al. (2013).

Data-Analysis Procedures

School visits occurred between February and April 2011, once or twice weekly. All data were marked with a unique participant code. Audiorecorded data were transcribed and coded using *a priori* codes (Miles & Huberman, 1994). These codes were not part of an existing coding scheme, rather, ideas for codes were generated based on previous inquiry research (Llewellyn, 2002; Shore et al., 2009; Shore, Chichekian, Syer, Aulls, & Frederiksen, 2012). Codes were imported into qualitative data-analysis software (VERBI, 2011). From these codes, those most relevant to perspective taking were selected for further analysis in the current study. These selected codes were then recoded using an additional set of codes that were created based on previous research on perspective taking (Batson et al., 1997; Flavell, Shipstead, & Croft, 1978; Gehlbach et al., 2008; Selman, 1971; see Table 1).

Table 1
SPT Roles With Associated Descriptions and Examples

SPT Role	Role Description	Example (from transcript)
Imagine self thinking (Self Thinker)	Imagining how you would think in someone's position (putting self in others' proverbial shoes) and includes the verb "to be"	"No but, I don't think it's a good idea to write that." (S3, February 16, Line 122)
Imagine self feeling (Self Feeler)	Imagining how you would feel in someone's position and includes the verb "to want"	"Yeah exactly, that's why I want to write it. That's why I was--" (S3, April 18, Line 126)

Imagine self acting (Self Actor)	Imagining how you would act in someone's position and includes the verb "to be"	"We're going to be like in front of the whole class. Like, they're probably going to sit on the carpets." (S2, April 13, Line 85)
Imagine self visual/perceptual (Self Visualizer)	Imagining how you would visually perceive a situation in another person's position	"No, but I saw it first." (S6, February 23, Line 201)
Imagine other thinking (Other Thinker)	Imagining how someone would think in a certain situation (imagine how a person would think in his or her proverbial shoes) and includes the verb "to be"	"Just because his name is premier, doesn't mean he's first." (S6, February 7, Line 14)
Imagine other feeling (Other Feeler)	Imagining how someone would feel in a certain situation and includes the verb "to want"	"I don't think it will scare them actually S3. I think it will, like, interest them to not do it."(S2, April 18, Line 627)
Imagine other acting (Other Actor)	Imagining how someone would act in a certain situation and includes the verb "to be"	"The government doesn't pay taxes. If the government paid taxes, they'd just be paying themselves." (S5, February 21, Line 97)
Imagine other visual/perceptual (Other Visualizer)	Imagining how someone would visually/spatially perceive a certain situation	"Look how big the poster is." (S2, April 29, Line 528)

Results and Interpretation

Four specific roles identified by Walker et al. (2013) that related to social perspective-taking included Respectful Listener, Audience-Appropriate Communicator, Open-Minded Collaborator, and Content Collaborator. For every transcript segment identified as one of the above four roles, more specific social perspective-taking roles were also assigned.

The present study also focused on specific variables within the classroom, including the nature of the classroom activities and instructional choices, individual student personality differences, and group-work dynamics. Within each category or variable, interview data, questionnaire data, and teacher and student log data were summarized in relation to perspective taking. Furthermore, the numbers and types of social perspective-taking roles were examined based on transcript analysis from classroom visits.

Classroom Activities and Social Perspective-Taking Roles

Walker et al. (2013) determined that the classroom activities in Group 1 corresponded more with social roles including Collaborator, Communicator, and Respectful Listener versus Group 2, in which the classroom activities tended to correspond with roles more cognitive in nature including Knower, Questioner, and Hypothesizer. When examining the relationships among classroom activities and social perspective-taking roles in the present study, similar insights emerged. When comparing frequencies of social perspective-taking roles across groups, there was a very large difference in the frequency of the Self Actor role. Group 1 members more frequently adopted a Self Actor role (imagine how oneself would act in a certain situation) compared to Group 2 members (365 instances for Group 1 versus 20 instances for Group 2; See Figure 2).

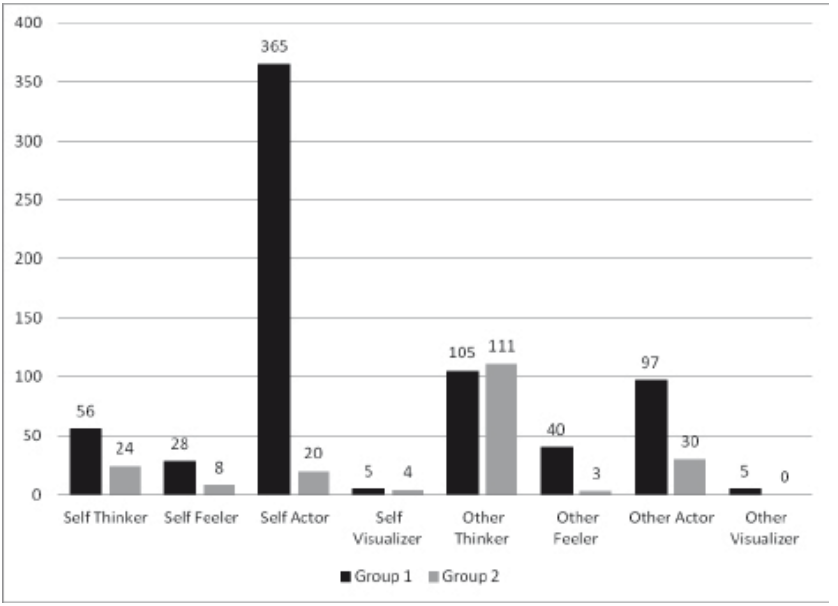

Figure 2. Frequencies of group SPT roles summed across all time points

This large difference corresponds with the nature of Group 1's assigned unit activity of putting together a presentation for a younger audience. When looking specifically at the Audience-Appropriate Communicator role category (from Walker et al. [2013]), Group 2 was only represented in one instance. This suggests that Group 2 simply did not have the opportunity to take on this particular role due to the nature of the classroom activities: The highest role frequency for Group 2 was the role of Other Thinker (111 instances), which is also consistent with the more cognitive nature of Group 2's assigned unit activities (e.g., creating a chronological timeline of Canada's prime ministers). Overall, both groups were adopting social perspective-taking roles, but the nature of these roles varied according to the classroom activities or teacher's instructions.

Instructional Choices and Social Perspective-Taking Roles

Classroom activities are typically decided by the teacher and so, naturally, the instructional choices also seem to impact social perspective-taking roles. The interplay between instructional choices and SPT became clearer in researcher field notes of classroom visits. Teacher 1 often began discussions that facilitated social perspective-taking roles based on events in the news or based on occurrences in the classroom. For example, on February 7, 2011, T1 introduced a lesson on the environment. A student had approached the SmartBoard in order to answer a question about what materials are recyclable but had a short whispered conversation with T1 before responding with a correct answer. Teacher 1 then stated to the class that the student had first provided a different answer to her during their whispered conversation and asked the class to guess what question she might have asked the student to help this student. This style of questioning requires students to engage in social perspective-taking in order to imagine what T1 might have asked.

Another example of facilitating social perspective-taking occurred on March 14, 2011. Teacher 1 began the class with a discussion about the recent earthquake and tsunami in Japan. She asked the class how they feel when a disaster happens in another part of the world, and asked them to think about ways they might be able to help. This question may have led students to reflect on what it might be like to be in that situation or to imagine how the Japanese people affected by the tragedy might be feeling.

One of the most striking examples of the facilitation of social perspective taking occurred in T1's class on February 21, 2011. A small group of students (not Group 1 students) were presenting to the class a poster that they had made, demonstrating how to use recyclable materials to create something new. Group 1 students were sitting in the audience and immediately noticed that this group had presented the information in the same creative way that they had. Both groups had drawn a picture of a recyclable material (e.g., piece of rope), followed by an addition sign followed by a picture of another recyclable material (e.g., tire), followed by an equal sign, followed by what can be made by combining the two materials (e.g., tire swing). Group 1 members were

immediately upset because they viewed this as plagiarism of their innovative idea. Following is a summarized account of what happened in the classroom, not from audiorecordings, but from field notes by the first researcher.

After the group finished presenting their poster, one of the members in this group commented about how the presentation had gone horribly. Teacher 1 immediately asked the members what had not gone well. One member answered that the writing on the poster was messy. Teacher 1 then asked, "What could you have done beforehand so you could share well?" This student answered that the group could have practiced. When T1 asked what else could have been done to make the presentation run more smoothly, S2 spoke up from the audience and stated that the group members could have kept their eyes on their own paper. Teacher 1 responded, "Is it possible that people used the same websites or books?" S1 and S2 called out, "They copied!" Teacher 1 soon realized that Group 1 members were talking about the copying of presentation style and not the information as such. She then responded by asking, "Is it possible that when I shared your work with the class earlier, another group was inspired by your ideas?" S2 again responded, "We don't like when people copy us!" At this point T1 responded, "OK, let's address this because I can tell you are frustrated. As a group we need to get over the copying thing, S2, they were probably inspired by your work, it's a form of flattery. I don't think their poster looks the same, they are both different, and maybe some parts are similar, but you are still going to get credit for coming up with the idea first, so it doesn't take anything away from you." Teacher 1 then provided an example from her own personal life to help demonstrate social perspective taking. In reference to two teachers who had visited her classroom earlier in the day to learn about some of T1's different teaching techniques, she asked the class, "If I went to their classroom and saw them using my mental math exercise, is it fair for me to tell them to not use my ideas? Well, Miss [Teacher 1] did not invent mental math, I got the idea from another teacher. How do you feel now?" S2 responded, "Those are teachers, this is different. You invited those teachers to come." Teacher 1 then said, "This is a good debate to have. I am giving you all credit as the first group who depicted the information in that way. You inspired others, and just like when we use information in a

book, we say, I used this book as a source. Maybe others used you as a source." T1 provided another example from her personal life, specifically about how her dance group in high school had used a similar dance move to another group. After this example, S3 apologized and S2 indicated that she was happy that the other group had liked their idea. T1 finished the discussion by stating, "Would it have been better if maybe they had asked you first? So from now on, we will give each other a heads up before we use a similar idea."

T1's flexibility during classroom time allowed for the facilitation of several different and important skills. First, acknowledging individual student concerns sent the message that the student's ideas and opinions were important and worth discussing. Second, T1 facilitated dialog among classmates about the sensitive topic of plagiarism. Third, T1 asked questions that encouraged social perspective-taking skills and used relevant personal examples to facilitate interest and to demonstrate different perspectives. Fourth, T1 helped the group come to a consensus on the topic and helped them accept a different perspective regarding the issue. Finally, T1 taught the class a valuable lesson about plagiarism and the sharing of ideas.

Similarly, several of the questions that T2 asked throughout her lessons encouraged students to put themselves in the proverbial shoes of the person of interest. For example, on February 16th, 2011, T2 asked the class, "What do you think some of the major accomplishments of these prime ministers are? Did some of them have a harder time in office than others?" In addition, on February 23rd, 2011, T2 asked, "Do you think the prime minister's accomplishments came from a goal?"

T2 also closely monitored each group's progress and intervened during serious disagreements or exchanges in which she felt that a member's perspective was being ignored. For example, on February 2nd, 2011, one group was in a heated discussion and T2 intervened to say, "Why are you negating other's ideas?" During that same class, T2 had originally instructed the groups to come to a consensus on the answers, however, after hearing all of the conflict, made a class announcement stating, "I should have told you that everyone's ideas count. Brainstorming would have avoided conflict so I should not have had you reach a consensus. That was my mistake." This particular instance facilitated social perspective-taking because T2 directly

intervened to ensure that all perspectives were considered and then later communicated to the class the importance of considering all ideas and perspectives during group discussions.

In another example on February 9th, 2011, T2 was reviewing the different characteristics of inquiry learning including Communicator and asked the class, "Would you be a good Communicator if you talked the same way to a five-year-old or to your peer? Would you talk the same way to me as to your brother?" These questions directly taught the students that communicating requires taking the perspective of the person you are communicating with to ensure that the communication is appropriate.

Overall, T1 tended to use world events or classroom events as opportunities to facilitate and build upon social perspective-taking skills (more social in nature) whereas T2 tended to ask reflective questions based on lesson content (more cognitive in nature). Therefore, both teachers were facilitating SPT skills, but in different ways.

Individual Differences and Social Perspective-Taking Roles

Individual differences among students impacted the numbers and types of social perspective-taking roles. Social perspective-taking skills for each participant were assessed in two different ways at the beginning of the unit. A social perspective-taking questionnaire was administered near the beginning and again near the end of the unit activities. In addition, an interview that examined interpersonal negotiation skills, an important component of social perspective taking, was administered near the beginning of the unit activities.

On an independent-sample *t* test, there were no significant differences between the two groups on any item related to social perspective taking. On a paired-samples *t* test, there were no significant differences for either group on pre- versus post-items of the SPT questionnaire. In other words, neither group showed any significant change in social perspective-taking skills over the course of the unit activities. On a task assessing interpersonal negotiation strategies, there were no significant differences across students in grades 4, 5, or 6, or between the two different groups for overall interpersonal negotiation strategies based on a one-way ANOVA and an independent samples *t* test, respectively. In

addition, the INS task categorized responses into orientations including self-transforming (changing oneself to meet the needs of another), other-transforming (attempting to change another person's perspective to meet one's own needs), collaborative (consideration of both perspectives equally), and indeterminate (strategies do not fit into one of the above categories; Schultz et al., 1989). There were no significant differences between grades or groups on INS orientations. Overall, there were no significant differences between groups or across grade level indicating that all participants could be considered to have the same level of social-perspective taking skills before and after the presented units of inquiry. The frequencies of SPT roles for each individual were also compared (see Figure 3).

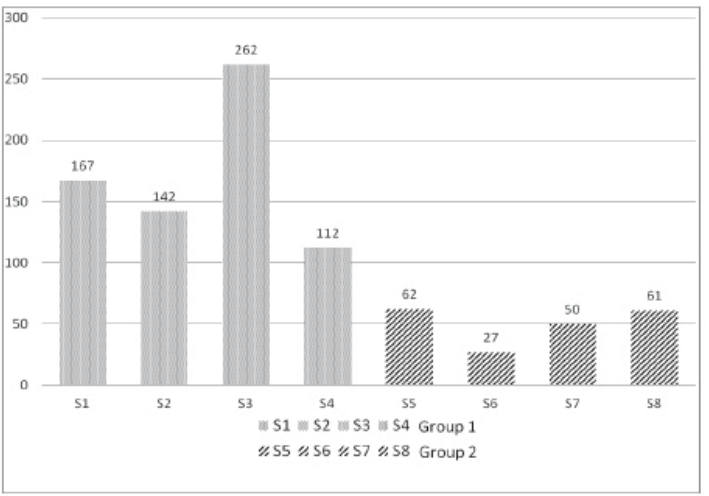

Figure 3. Frequencies of student SPT roles summed across all time points

Group 1 students tended to adopt more SPT roles compared to Group 2 students. S3 (Group 1) took on SPT roles more frequently than any other student at 262 role instances, and S6 (Group 2) took on the fewest number of SPT roles at 27 instances. When considering individual personalities, S3 and S6 tended to be the most outspoken members in

each group, but were outspoken in different ways. S3 tended to be outspoken but considerate of all members' ideas (e.g., "I know. So now we say--What did you write S1?"; April 18, Line 503), whereas S6 tended to be outspoken but stubborn at times (e.g., "Who cares? It's the same as salaries."; February 21, Line 87). Perhaps being outspoken but considerate leads one to adopt more SPT roles compared to someone who is outspoken but maybe not as considerate of all perspectives.

Within the Imagine Self role category, S3 adopted the highest frequency of the Self Thinker, Self Feeler, and Self Actor roles compared to all other participants (see Figure 4).

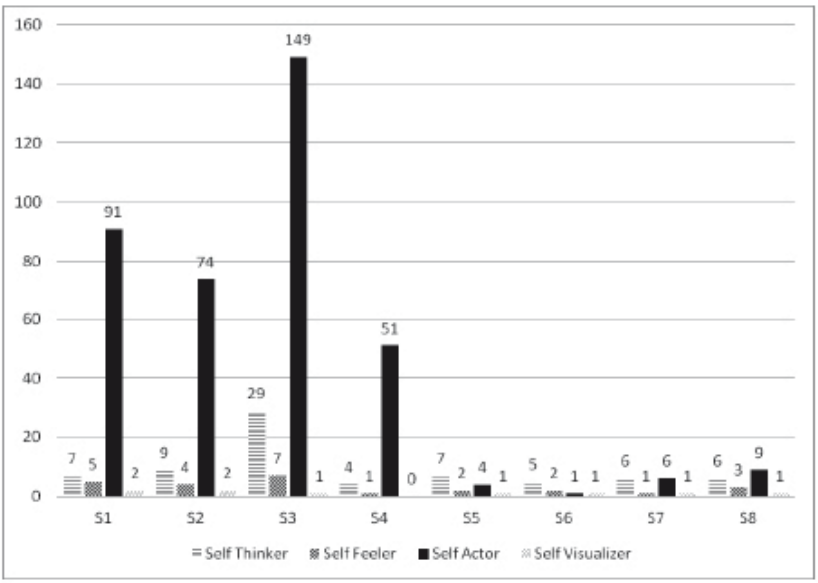

Figure 4. Numbers of different Imagine Self roles adopted by each participant across time

Therefore, S3 was often able to imagine how she might think, feel, and act in different situations. Similarly, within the Imagine Other role category, S3 adopted the Other Feeler role more frequently than other participants (see Figure 5).

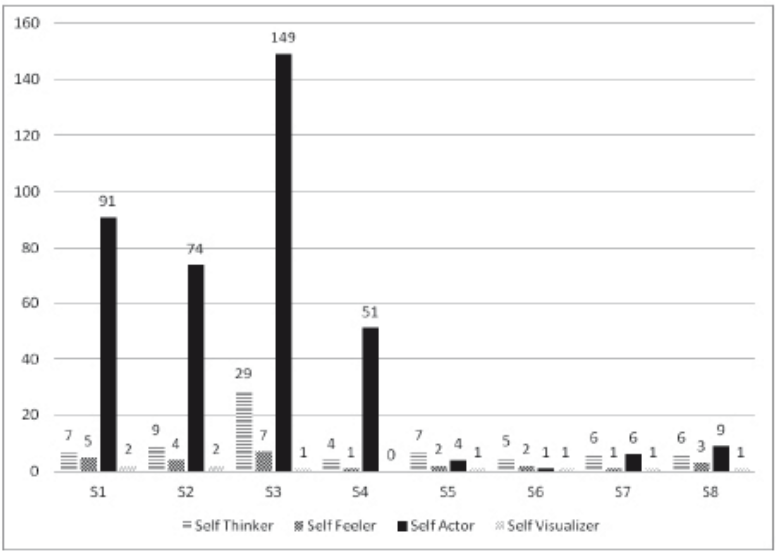

Figure 5. Numbers of different Imagine Other roles adopted by each participant across time

S4 adopted the Other Actor role more frequently compared to all other participants whereas the Other Thinker role was adopted most often by S5 followed by S8 (38 and 36 instances respectively), and was adopted least often by S6. Overall, within the Imagine Other roles, Imagine Feeler and Imagine Actor roles were most often adopted by Group 1 members whereas the Other Thinker role was most often adopted by Group 2 members. This may have related to the nature of the classroom activities as described above, but individual differences may have also contributed to some of these differences. For example, S3 was considerate of her group's needs and therefore may have been more likely to adopt roles that involved imagining how another person might feel. In addition, S5 tended to be quite confrontational at times (e.g., "No, that doesn't have to do with anything though!"; February 23, Line 247) and, as a result of this debate-like challenging, may have been better equipped and more likely to imagine how another person might be thinking. Although the Other Visualizer role was very infrequent, S2 adopted this role more frequently than all other participants. This role

was only adopted in one other instance by S3. Perhaps S2 was better able to imagine the visual conditions of a situation rather than how another person might be thinking, feeling, or acting.

A better understanding of individual differences in personality and interpersonal dynamics became clearer when examining interview data for each participant. Interviews were conducted near the end of the unit activities. Each participant was asked who the leader of the group was throughout the unit. Interestingly, S6 identified herself as the leader of the group, and indicated that she would tell the members what to do and did most of the work. This is consistent with her outspoken but sometimes stubborn personality. S3 claimed that there was no leader of the group and that they worked as a team and that every member was a leader in her own way. S4, meanwhile, identified S3 as the leader of the group. This is consistent with the high number of roles that S3 adopted. All other participants indicated that there was no leader of the group and that this responsibility was a shared one.

Group Dynamics and Social Perspective-Taking Roles

Although individual differences influence interactions within inquiry environments and social perspective-taking roles, how individuals interact within their interpersonal situations provides a clearer window into the perspective-taking process. Group 1 students were previously friends and therefore tended to get along very well throughout the unit activities. Group 2 students were not previously friends and were selected by T2 in what she believed would be a good group for the first author to examine. The conflict among members within Group 2 became so great that eventually T2 had to separate the members for the remainder of the unit. Group 2 did temporarily reassemble during researcher visits.

As a first examination of group differences, variability of roles across time were compared. Values of 0 indicate that a transcript was not obtained on that particular day. No clear patterns emerged in terms of the frequencies of SPT roles across time. Time therefore did not seem to influence the pattern of SPT roles adopted by either group (see Figure 6).

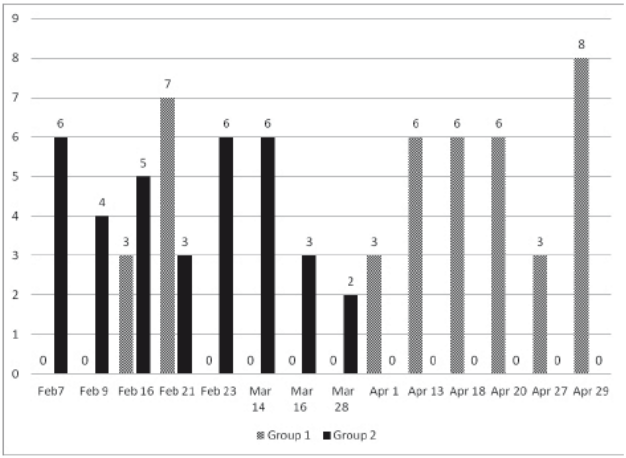

Figure 6. Numbers of different SPT roles adopted by each group across time

When comparing Group 1 with Group 2, Group 1 students tended to more frequently adopt Imagine Other roles, specifically Other Feeler, Other Actor, and Other Visualizer roles (see Figure 7).

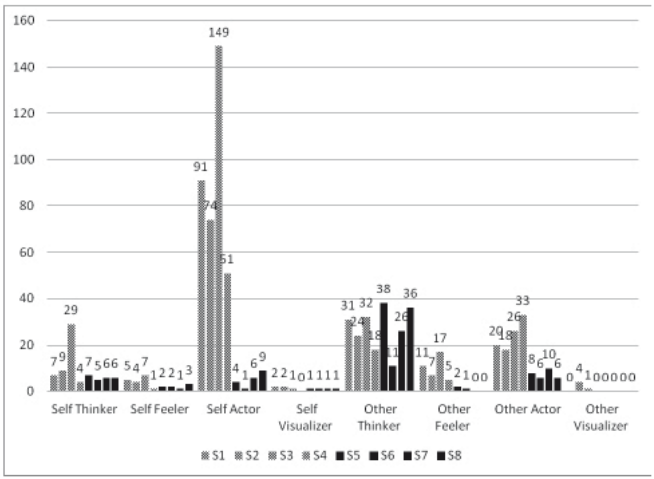

Figure 7. Frequencies of different SPT roles adopted by each individual summed across all time points

There were very few, if any, arguments within this group. Imagine Other roles tend to require a higher level of perspective taking because, instead of imagining how oneself might act or feel in a certain situation, this person must imagine how another person might act or feel in a certain situation. This relates well to the process of role diversification in inquiry. Perhaps cooperation and friendship facilitated a higher level of perspective taking in terms of more frequently adopting Imagine Other roles. This is consistent with Gehlbach's (2004) multidimensional approach to SPT, specifically, that engaging in SPT requires a motivational component and that familiarity facilitates perspective taking. Friends may therefore be more motivated to engage in SPT. Gehlbach also discussed that females may engage in SPT more frequently and this group was entirely female. Gehlbach, Brinkworth et al. (2012) also identified several characteristics that increase one's motivation to adopt other's perspectives and several of these related to friendships including prosocial goals, relationship goals, social influence, and the importance of the target to the person engaging in SPT.

Group 2 students argued frequently and had to be separated (after the February 23 classroom visit). These members infrequently adopted Other Feeler, Other Actor, and Other Visualizer roles. Group 2, did however, more frequently adopt the Other Thinker role. Perhaps certain or heated discussions can facilitate social perspective taking, specifically, imagining how other people think in certain situations. This is also consistent with Walker and Shore's (2013) Engagement phase of inquiry role diversification because conflict may arise during this phase due to conflicting expectations of roles. Perhaps Group 2 students spent more time within the Engagement phase as opposed to the fourth phase of Diversification. Furthermore, facilitating social competence within peer discussions requires participants to not only provide and criticize explanations, but also involves a willingness to adopt another individual's explanations and to believe these explanations (Mischo, 2005).

Several interview questions provided additional insight into the group dynamics and the impact on social perspective-taking skills within each group. All participants were specifically asked if they believed that they worked well with the other members in their group. All Group 1

members responded yes to this question, often citing the fact that they were all friends prior to beginning the unit. S3 answered yes and stated that although sometimes they might have argued about who would complete what activities, she identified the group as a good group. Group 2 members responded differently to this question. S8 responded with a yes and a no to the question, indicating that there were some members in the group who were "mean." S7 indicated that although there were ups and downs, it was "pretty good," and added that there were some problems with S6 because they were not friends prior to beginning the unit. S6 similarly identified the difficulties with S7. S5 responded that it was harder to work with the group members because he did not consider them to be his friends.

When asked if participants felt that their group argued a lot, Group 1 responses included "no," "a little bit," "no, not a lot," and "not really." Group 2 responses included "sometimes," "no, not really," "yes," and "yes." Students who responded "yes" or responded with anything other than "no" were further asked if this arguing was helpful in some way. Group 1 members responded with "I don't know," "maybe a little bit," and "maybe, yeah." Group 2 members responded with "yes," "sometimes, sometimes not," "no," and "no." S6 commented, "well the arguing in our group wasn't really like good arguing" (March 28, Line 189).

Another question related to group dynamics and social perspective taking and asked students if they thought that their group members valued their ideas. The majority of Group 1 members responded affirmatively to this question, specifically indicating that, yes, they felt that their ideas were valued by other group members. S3 responded, "Some of them, not all. I remember some they wouldn't, they would say, 'It's not a good idea' or 'I don't really feel like doing that'" (April 27, Lines 168-169). Among Group 2 students, responses were more varied. Two students responded that sometimes they felt that their ideas were valued and other times they felt that their ideas were not valued. One student responded "yes, definitely," and another student responded "not all of my ideas, but most of them."

Participants were also asked if they felt that their group spent more time in discussion or more time actively working to complete the assigned activities. Three of the four Group 1 members indicated that

more time was spent in discussion and one member felt that with one activity, more time was spent in discussion and in another activity, more time was spent actively completing the activity. Similarly, three out of the four Group 2 members indicated that more time was spent in discussion and one member felt that half of the time was spent in discussion and half of the time was spent actively working.

T1 specifically acknowledged social perspective taking among the Group 1 members in her final interview with the first author. In a discussion about her perceptions about the group dynamics within Group 1, T1 mentioned that she felt the group had worked very well together and that they were very effective at listening to each other and respecting one another's opinions. She also stated that these students tended to be very conscious of their audience. Commenting on a unit activity that involved creating a presentation for the younger grades about the importance of recycling, T1 said, "through discussion they realized what's appropriate to tell the younger grades and what's not, and that was through discussion. You know some of the students were scared that they would scare the younger ones, so that was interesting" (April 27, Line 66-68). Later in the interview, T1 reiterated, "That's amazing to hear and just to see that they're conscientious of their audience. I think that's important. ... They have concern for others, they have that empathy and that's amazing to see at 10 years old" (April 27, Lines 372-376).

Further insight into group dynamics was gathered from student log responses written on individual sheets of paper in response to a written question posed by the first author. On February 23, 2011, students were asked what they enjoyed least about working on the activities that day. Group 2 responses were particularly telling in terms of some of the conflicts that had emerged at this stage in the group's progression through the unit. The following responses were grammatically corrected for easier reading: "The fact that S8 wasn't listening to me," "I think it was when me and S6 had our disagreement," "That my partner doesn't do a lot of work and that I do most of the work." One student in this group also wrote a paragraph referring to a disagreement with another member that required teacher intervention. This log entry detailed the student's side of the argument and expressed frustration about not feeling heard by the teacher.

On March 16, 2011, T2 was asked if the group had faced any difficulties, hurdles, or challenges and, if so, what they were and how the group dealt with them. T2 identified listening to one another as a challenge for this particular group of students, along with respecting that everyone has an opinion, and compromising. She indicated that the group required intervention and guidance to make compromises including discussion about respecting other's opinions.

On April 27th, 2011, near the end of the unit, Group 1 members were asked if they believed that they were making good progress on their project. The responses were as follows, "yes, because we are really putting our heads together and discussing what we think--if someone in our group says something average, we try to make it better and build on it," "yes my group is making good progress because we're working hard and not fooling around," and "I think we are doing better because we are now staying on topic." The group dynamics within Group 1 and Group 2 differed dramatically, and this was related to the social perspective-taking roles that were adopted within each group. Perhaps the conflict within Group 2 or the lack of friendships among members decreased the motivation to engage in the more emotional forms of SPT, including Other Feeler and Self Feeler roles.

Conclusions

Social perspective taking is a complex process and examining these skills within the dynamic and complex social environment of a classroom can be difficult. This research investigated the interplay between social perspective-taking skills and role diversification within inquiry classrooms. Three influences provided the framework for investigating this relationship including nature of the classroom activities and instructional choices, individual personalities, and group dynamics.

There were no significant *t*-test differences on the social perspective-taking questionnaire and interview data, suggesting that perspective-taking skills were the same or very similar between the two groups and across the three grade levels. These *t*-tests were exploratory, and the absence of significant differences, especially in the face of low power due to small sample sizes does not strongly assert that there are no

underlying differences, only that none were detected here on this occasion. Any differences that were observed in terms of SPT roles can be at least partially attributed to the nature of the classroom activities and instructional choices, individual student personalities, and group dynamics.

One of the most interesting insights from the current study related to the nature of the perspective-taking roles. Historically, perspective taking has been largely conceptualized as a stable trait that one gradually acquires throughout childhood development (Selman, 1980). Furthermore, individuals can differ in their level of perspective-taking ability. The current study suggested a different hypothesis.

Although levels of SPT ability were similar between the groups, the nature of the SPT roles that were adopted differed throughout the respective inquiry units. This suggests that in addition to SPT skills being stable, these skills may also have a state-like characteristic and be more fluid, dynamic, or susceptible to external influences than originally suggested. This hypothesis cannot be adequately tested from the current series of observations, however, it does warrant further investigation.

Furthermore, the group that engaged more frequently in emotionally-oriented and action-oriented SPT roles tended to work very well together and successfully completed all unit activities.The other group tended to exhibit more cognitively-oriented SPT roles and eventually required teacher intervention to resolve conflicts within the group. This suggests that the proper conditions must be implemented to allow students to take on more emotionally-based SPT roles in order to function well as a group. To create this ideal environment, teachers need to take into consideration the nature of the classroom activities and the instructional methods, individual personalities, and group-work dynamics. For example, Group 1 students may have thrived because the assigned activities inherently required considering others' perspectives, the students were allowed to choose their own group members, the group members' individual personalities meshed well together, and members knew each other well and were previously friends.

Reflecting back on previous research, several studies support and relate well to some of the observations within the current study. Gehlbach, Brinkworth et al. (2012) noted how hubris or a lack of energy

can hinder SPT while prosocial goals and relationship goals can facilitate SPT. This was consistent with the conflict that was experienced within Group 2 and the corresponding SPT roles that were more cognitive in nature and less frequent use of more complex, other oriented SPT roles. Group 1 worked very well together and this corresponded with higher frequencies of emotional roles and more complex other-oriented roles. Allowing groups to self-select may be advantageous in certain situations for the facilitation of perspective taking and collaboration in inquiry group-work settings.

Cooperative activities require a division of labor among members whereas collaboration requires working together without well-defined roles (Gillespie & Richardson, 2011). Within inquiry, collaborative activities are the norm, therefore offering additional opportunities to adopt numerous roles, diversify existing roles, and adopt roles that are often non-traditional in nature (e.g., question asker role). Gillespie and Richardson (2011) determined that exchanging roles leads to less divergent perspectives and therefore better perspective taking skills and the more frequently that roles are exchanged, the larger the effect. Within the current study, both groups frequently participated in collaborative inquiry activities and both groups also demonstrated similar levels of social perspective-taking ability. Furthermore, both groups demonstrated a wide range of social perspective-taking roles. Although there were differences in the nature of some of these roles, the role diversification that occurs within inquiry can be hypothesized to be comparable to how exchanging roles facilitates perspective-taking abilities.

Creating a successful inquiry environment requires careful consideration of social perspective taking within the classroom. Social perspective taking is important to classroom success within inquiry environments, but caution is warranted in assuming that SPT or the ability to engage in SPT is the only influence on what happens in the class. This paper presented several examples within classrooms that at the very least suggested connections between inquiry group dynamics and the social perspective-taking skills of pupils. Engagement in inquiry can influence the types of social perspective-taking roles that are adopted and the quality of this SPT influences the quality of inquiry learning, creating a mutually cyclical or mutually supportive

relationship that leads to dynamic and complex interactional patterns and SPT roles.

Limitations

There were limitations with the current research, primarily related to the nature of the environment under study. Although classroom activities and instructional choices, individual student differences, and group-work dynamics were discussed as influences on social perspective-taking roles, it is possible that there are additional influences that were simply not evident within this study, for example, cultural beliefs. The other difficulty arises from the complexity of studying an authentic classroom environment. Teasing out the relative contributions of classroom activities, instructional choices, individual personalities, and group dynamics on SPT skills is challenging. Although the smaller sample size allowed for a more in-depth examination of these classroom variables and social perspective-taking roles, additional research of this kind would be helpful in verifying some of the above conclusions.

Furthermore, it would be helpful to replicate this research with groups that were in different stages of inquiry implementation. Although one teacher was new to teaching and inquiry techniques in particular, and one teacher was quite experienced, all the pupils were new to inquiry and so examining these variables in a classroom well versed in inquiry would provide useful comparisons. Other ideas for additional research directions include a greater focus on the student-teacher relationship and potential teacher SPT roles. Some research has already started to address SPT within teacher-student relationships (Gehlbach, Brinkworth, & Harris, 2011). For example, teachers reported better relationships with those students who were better at adopting the perspective of their teacher. Social perspective taking was consistently associated with teacher-student relationship quality. For practitioners, these results underscore the promise of social perspective taking as a means to improving teacher-student relationships; for researchers, these findings signal the need to account for motivation, accuracy, and context in the future.

An additional limitation related to sex and age differences. In an attempt to maintain some consistency in terms of environmental

characteristics, only one school was selected and from within this school, two classes were selected based on the teachers who were willing to participate. Some research has suggested females may be better able to engage in SPT. In terms of the different ages, some of the younger students may have been at an earlier phase of cognitive development (e.g., Piaget's concrete operational phase), and may have therefore struggled to engage in more of the cognitively-based roles that involve more abstract developmental thinking and hypothesizing.

Implications

Researchers. The current study provides researchers with a framework for conceptualizing a particular subset of inquiry roles related to social perspective taking including Other Thinker, Other Feeler, Other Actor, Other Visualizer, Self Thinker, Self Feeler, Self Actor, and Self Visualizer. Within inquiry settings, students and teachers may often adopt additional roles in the classroom that they may not have adopted in a traditional classroom. This diversification of roles may necessarily require social perspective-taking skills.

Consultants. For consultants, the information from the current study provides an interesting look into the importance of the social lives of elementary school students. For school psychologists, it provides insight into interpersonal relationships within collaborative settings. Identifying classroom conditions that facilitate social perspective-taking skills can be applied to promoting friendship development and can help inform the debate about the link between perspective-taking skills and bullying behaviors (Caravita, Di Blasio, & Salmivalli, 2009; Sutton, Smith, & Swettenham, 1999). Many researchers have also begun to examine if perspective-taking skills can be specifically taught (Chandler, 1973; Gehlbach, Young, & Roan, 2012; Heagle & Rehfeldt, 2006).

Teachers and students. Teachers may want to involve students in the decision process when developing working groups. Similarly, students may want to consider how their own individual personalities and characteristics can shape their interpersonal relationships and abilities to engage in social perspective taking. If the conditions that facilitate social perspective taking are addressed and investigated, then the

probability for healthy interactions in the classroom can be increased. Teachers benefit from being able to anticipate which instructional decisions will make learning accessible for all of their students and students need to be prepared for the increasingly diverse multicultural settings that bring with them several different perspectives requiring advanced SPT skills. Galinsky and Moskowitz (2000) also examined social perspective taking and through an experimental manipulation determined that perspective taking can reduce biased social thought and stereotypes. Teachers could also assign tasks that more easily facilitate emotionally-based SPT roles when group work is involved.

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Appendixes

Appendix A

Social Perspective-Taking

Questionnaire

Please answer the following questions. This will take approximately 30 minutes. Please do not write your name anywhere on these pages.

Birthdate: Month_____ Date _____ Year _____

What grade are you in? _____

I am a (circle one):

Girl Boy

How often do you do group work in your class? (Circle one)

Never Sometimes Often Always

Please rank the following subjects where 1 = most important to 4 = least important to you.
_____ English
_____Math
_____Science
_____Social Studies

Please continue onto the next page.

Please check the most appropriate box after each question

	Not at all interesting	Slightly interesting	Moderately interesting	Quite interesting	Extremely interesting
1. Overall, how interesting do you find your unit on the environment?	☐	☐	☐	☐	☐
2. When you hear about the environment in the news, how interested are you?	☐	☐	☐	☐	☐
3. How interesting are the different topics you study in this unit on the environment?	☐	☐	☐	☐	☐
4. How interesting are the assignments you are given for this unit?	☐	☐	☐	☐	☐

Please check the most appropriate box after each question

	Almost never	Once in a while	Sometimes	Often	Almost all the time
1.How often do you try to figure out how the people around you view different situations?	☐	☐	☐	☐	☐
2. If you are having a disagreement with your friends, how often do you try to imagine how they are feeling?	☐	☐	☐	☐	☐
3.How often do you try to understand your classmates better by trying to figure out what they are thinking?	☐	☐	☐	☐	☐

Please check the most appropriate box after each question

	0 Does not describe me well	1	2	3	4 Describes me very well
1. I believe that there are two sides to every question and try to look at them both.	☐	☐	☐	☐	☐
2. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.	☐	☐	☐	☐	☐
3. I try to look at everybody's side of a disagreement before I make a decision.	☐	☐	☐	☐	☐
4. I sometimes find it difficult to see things from the "other guy's" point of view.	☐	☐	☐	☐	☐
5. Before criticizing somebody, I try to imagine how I would feel if I were in their place.	☐	☐	☐	☐	☐
6. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.	☐	☐	☐	☐	☐
7. I sometimes try to understand my friends better by imagining how things look from their perspective.	☐	☐	☐	☐	☐

Appendix B

Interpersonal Negotiation Strategies Interview (Selman, 1989)

"Everyone runs into problems with other people all the time and has to work out ways to solve these problems. I'm going to read you some make-believe examples of these kind of problems and then ask you a series of questions about them. There are no right or wrong answers to these questions; we're just interested in your ideas about solving these problems."

Dilemma 3: Bob (Debbie) and Steve (Anne) are classmates. They don't know each other very well, but their teacher has assigned them to work together on a social studies project about Africa, and they are trying to decide on a topic. Bob (Debbie) wants to do the report on wild animals, but Steve (Anne) wants the report to be about different tribes, like pygmies.

8. What is the problem here? Why is that a problem?
9. How do you think Bob (Debbie) feels? Why does he (she) feel that way? How do you think Steve (Anne) feels? Why does he (she) feel like that?
10. What are all the things you can think of that Bob (Debbie) can do to solve his (her) problem with Steve (Anne)? How would that solve the problem? What else could he (she) do? Why would he (she) do that?
11. What would be the **best** way for Bob (Debbie) to solve his (her) problem with Steve (Anne)? Why is that the best way to solve the problem?
12. How would Bob (Debbie) and Steve (Anne) feel if Bob (Debbie) did that? Why would they feel like that?
13. What could go wrong with Bob's (Debbie's) solution of? Why might that mess it up?
14. What would Bob (Debbie) do next if that happened? Why would he (she) do that?
15. How would Bob (Debbie) know if he (she) had really solved the problem?

Dilemma 7: Jimmy's (Bonnie's) class has a substitute teacher named Mr. Jones for the day. Jimmy (Bonnie) is working on some difficult math problems that he (she) is supposed to finish before lunch. He (she) needs some help from Mr. Jones, but Mr. Jones seems very busy with other kids in the class.

16. What is the problem here? Why is that a problem?
17. How do you think Jimmy (Bonnie) feels? Why does he (she) feel that way? How do you think Mr. Jones feels? Why does he feel like that?
18. What are all the things you can think of that Jimmy (Bonnie) can do to solve his (her) problem with Mr. Jones? How would that solve the problem? What else could he (she) do? Why would he (she) do that?
19. What would be the **best** way for Jimmy (Bonnie) to solve his (her) problem with Mr. Jones? Why is that the best way to solve the problem?
20. How would Jimmy (Bonnie) and Mr. Jones feel if Jimmy (Bonnie) did that? Why would they feel like that?
21. What could go wrong with Jimmy's (Bonnie's) solution of? Why might that mess it up?
22. What would Jimmy (Bonnie) do next if that happened? Why would he (she) do that?
23. How would Jimmy (Bonnie) know if he (she) had really solved the problem?