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Social argumentation in online synchronous communication

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Abstract The ability to argue well is a valuable skill for students in both formal and informal learning environments. While many studies have explored the argumentative practices in formal environments and some researchers have developed tools to enhance the argumentative skills, the social argumentation that is occurring in informal spaces has yet to be broadly investigated. The challenges associated with observing and capturing the interactions in authentic settings can be identified as the main reasons for this deficiency. On the other hand, the advancements in information technologies and the way these improvements lift the barriers between school and afterschool settings present ways to eliminate these challenges. To this end, this study utilizes a popular Massively Multiplayer Online Role-Playing Game (MMORPG), *World of Warcraft* (*WoW*), which provides an authentic environment, to investigate the quality of argumentation in online synchronous communication without interfering with the substantial characteristics of the interaction. The results of the study demonstrate the quality of argumentation skills a group of adolescents are displaying in online synchronous *WoW* chat as well as the patterns that emerge from the interplay between a number of contextual variables including synchronicity, interest, and authenticity.

Keywords Argumentation · Online synchronous communication · MMORPG · Authenticity · Counterargument analysis

Introduction

Making skillful arguments is an essential human ability used in a variety of settings. It is fundamental for students to be able to construct sound arguments supported with relevant evidence so that they are considered to be college and career ready in literacy (Common

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Core State Standards Initiative 2010). Argumentative practices emerge as effective resources to deal with contradictions and make controversial decisions as they engage participants in reasoning and search of logical premises. Cognitive researchers demonstrate the relationship between argumentation and learning in various domains including social sciences where the students develop, defend or evaluate their perspectives (Resnick et al. 1993).

Within the computer-supported collaborative learning (CSCL) community, argumentation has been named as one of the critical "flash themes" (Stahl 2007). Collaborating with investigations in the linguistic, dialogical and social processes that sustain or provoke reasoning and learning, the field of CSCL has, in particular, been interested in social (conversational) argumentation and how students can benefit from it. Mostly rooted in the framework of the sociocultural perspective (Vygotsky 1978; Wertsch 1991), the research on social argumentation points to the importance of social interaction in learning and emphasizes that socially mediated activities invoke higher thinking processes.

Although argumentative skills have an emphasized importance in formal education, they are not always easy to teach in schools due to many complexities such as proper teacher training, developing assessment methods, and coping with overloaded curricula (Muller Mirza and Perret-Clermont 2009). These challenges encouraged educational technology researchers to identify how technologies can fill this gap and be employed to improve students' learning of argumentation (Scheuer et al. 2010). Previous studies in this area mostly focused on developing argumentation systems that incorporate argumentative representation tools (e.g., the Belvedere system) where users dismantle an argument to understand what constitutes a good argument and use these tools to assist them in constructing stronger arguments. However, because argumentative representation tools investigate the arguments outside of their original contexts, they run the risk of alienating the users from the topic and therefore may lead to the loss of interest in the participants. In order to eliminate this risk, some of the argumentation systems combine visual tools with an online debating mechanism, which can be either synchronous or asynchronous. Such visual tools have demonstrated the positive impacts that online communication may have on argumentative skills (Chan et al. 2009; Asterhan and Schwarz 2010).

While there exists research on the effects of online communication on argumentative skills in formal settings, the social argumentation that is occurring casually in online synchronous communication has yet to be broadly investigated. This is mainly because the argumentation systems are very often not available outside of their formal contexts. The challenge associated with observing and capturing the interactions in authentic spaces without interference is another major reason for this deficiency. The research presented here fills this gap by demonstrating the quality of argumentation skills that adolescents display in an authentic, online synchronous setting.

Previous research

Argumentation is a robust field with strong roots in the past. Many theorists contributed to the field of social argumentation from a variety of standpoints. Therefore, researchers focusing on online argumentation adopted various theories to make sense of their data. One of the theoretical frameworks prevalently used to analyze the structural quality of the social arguments is Toulmin's model. Toulmin (1958) identified six parts that a strong argument should include; claim, data, warrants, rebuttals, backings, and qualifiers. An argument that includes more of these parts has a higher structural quality. He also emphasized the importance of rebuttals in an argument. For Toulmin, the presence of rebuttals in an

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argument increases the quality of that argument. However, researchers who adopted this scheme to investigate online argumentation emphasize the difficulties to identify the parts of an argument while doing the analysis (Clark and Sampson 2007), which compels them to synthesize and tailor the theory.

Some theorists criticize the oppositional nature of argumentation emphasized by the theorists such as Toulmin and Walton. They argue that individuals should build on each other's knowledge rather than try to convince one another to their own viewpoints through argumentative discourse (Andriessen et al. 2003a, b). Leitao's work (2000) supports this perspective and addresses argumentation from a constructivist approach. She claims that the changes in ideas and knowledge building that one engages through argumentation is the crucial part of argumentative discourse and therefore should be the focal point of analysis. She criticized Toulmin's framework for not displaying how the participants' arguments are influenced and transformed throughout a discussion.

Because she acknowledges oppositions as the gateway to acquiring new knowledge, Leitao defends that counterarguments and responses to these counterarguments are the best mechanism to analyze this mutual influence between speakers. She suggests that it is very rare to achieve a complete change in views in everyday discussions and that it only occurs in teacher-directed discussions where students are already unsure about their opinions. She also indicates that counterarguments do not always oppose an initial claim but sometimes present a different perspective on the same topic. Walton (1996) describes these types of counter-arguments as the weaker type of argument compared to the ones that directly attack the grounds of the initial argument. However, Leitao claims that the counterarguments that present a different point of view broaden the concepts being learned and therefore is useful for enriching the content-knowledge.

Walton (1996) proposes that social argumentation can only be truly understood in its conversational context. Therefore, contrary to the theories that consider argument as a product, he suggests that analyzing an instance of argumentation as a structured series of statements that express a line of reasoning is not enough to make an adequate analysis of an argument and decide whether it is good or bad. The context that includes the type and the goal of a dialogue is as substantial and relevant for the evaluation as the argument itself. In line with the constructivist theories, Walton argues that as learners inquire into complex problems through arguments and construct counterarguments, they develop their argumentative knowledge (Walton and Krabbe 1995).

The online argumentation that has been analyzed in the literature diverges based on the nature of online tools that are incorporated into the studies. One group of researchers develops their own online tools (i.e., discussion boards) and presents them to the participants during data collection (See for instance; Clark et al. 2009; Nussbaum 2008; Janssen et al. 2007; Reed and Wells 2007; Baker et al. 2007; Kirschner et al. 2003). They analyze the effects of the tool on student performance with pre-post tests. Their findings support that such tools can provide excellent support for argumentation in classrooms (Clark and Sampson 2007; Andriessen et al. 2003a, b; De Vries et al. 2002). However, the purpose of incorporating online tools into these studies is mostly either to attract students' interest to the discussion (Kuhn et al. 2008; Kim et al. 2007) or to help them understand, analyze, and generate the arguments through visualization tools (Van Gelder 2002; Suthers et al. 1995). Therefore, these tools have been mostly employed to assist with the intentional/formal learning spaces created for the students.

Another group of researchers investigate naturally occurring argumentation practices in online environments such as forums, weblogs, and instant chat. These studies are significant as they demonstrate how the interest-driven nature of these spaces promotes the argumentative practices (De Moor and Efimova 2004). Research suggests that if the students fail to

develop a personal interest in the discussed topic, their attention to the argumentation only remains superficial (Kuhn 1992). To understand how personal interest and authenticity affect the argumentation practices, research should be extended beyond the classrooms and intentional learning spaces. The technological tools that allow immense amount of communication other than face-to-face interaction calls for more research on how such spaces can be adopted for education.

Argumentation in online games

Videogames have been a point of interest for the researchers in many ways including their impact on learning. An emerging group of researchers in the field of online argumentation utilizes educational games to create authentic learning environments that promote argumentative practices (Squire and Jan 2007; Barab et al. 2009; Dede et al. 2003). These environments diverge from other online tools because they are not always developed to teach argumentative skills per se. However, the scientific game narrative provides students with opportunities to practice debate. Although the research on argumentative practices in and around online games is still scarce, recent studies yield promising results on the quality of argumentation occurring in these environments. Steinkuehler and colleagues (Steinkuehler and Duncan 2008; Steinkuehler and Chmiel 2006) analyze the social argumentation that take place in Massively multiplayer online (MMO) environments, particularly in forums. Steinkuehler emphasizes MMO games as promising spaces that can foster "scientific habits of mind", specifically model based reasoning and scientific argumentation.

Online games have the potential to serve as an authentic space for conversations considering the close comparisons to the dialogues in real-life. Gee (2005) compares videogames to 'sandboxes' where the kids can explore the world in a real-life-like space where the risks are eliminated and they still give a sense of authenticity. In fact, for this research, the guild chat functions as a sandbox. The discussions in and around MMO games are quite similar in structure to the debates in more formal online spaces with specific domain knowledge and jargon except that they are related to the topics that the players would seldom engage in their daily lives. The contextual knowledge that MMOs provide for students enhances the authenticity because the topics the players debate in the game are unique to the synchronous chat of *World of Warcraft* (*WoW*), a popular online role-playing game. Similarly, many topics of debate that are highly valid in a real-life situation are considered as contextually incoherent in these environments and very often agitate the players.

Research suggests that human perception and actions mutually affect each other (Clark 1997), which also stresses the importance of situated learning. *WoW* chat serves this purpose well throughout the game by creating an authentic context for discursive arguments. The players of *WoW* use the contextual knowledge they accumulate throughout their gaming experience and use strong evidence based on their experience and their contextual knowledge during the debates in synchronous chat. The players usually ground the premises on the texts they read in online forums or official *WoW* websites. Because the topic of discussion is almost always initiated by the players on issues related to their experiences, the discussions are interest-based, which I argue adds to the complexity of the discussions.

Context description and focus of research

The research on MMOs reports promising findings about the intellectual practices in these environments. Collaborative argumentation and knowledge building taking place in and

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around these spaces assist the development of individual argumentation skills as well since there is a positive correlation between collaborative and individual argumentation (Graff 2003). Although MMO game forums have been of interest to investigate cognitive skills (i.e., Steinkuehler and Williams 2009), the argumentative practices that players are engaging in synchronous discussions in these games are yet to be discovered. Considering that cognitive skills are transferable to other contexts (Salomon and Perkins 1987), a detailed investigation of chat logs in the MMO games would yield important implications on the argumentative practices adolescents are engaging in these informal learning spaces (Jenkins et al. 2006) where instructors are not present, structures are provisional, and learning is often experimental.

Contrary to the claims that unstructured online discussions rarely construct counterarguments (Stegmann et al. 2007), I argue that MMOs have the potential to foster well-structured counterarguments because of their problem-based narrative inherent in their design. *World of Warcraft* (*WoW*) is chosen for this research because of the complexity of the game narrative as well as the components that allow for user control and the individualization of game play. The game narrative takes place in a fantasy world in which the players can level their characters through completing individual or group quests, battles with their opponents, and crafting their skills. Basically, the players choose their characters from the two opposing factions –Alliance or Horde so they can compete with players from the opposing faction, or group with the players from the same class to complete group quests. Quests are tasks that players can take on individually or within a group in order to gain a reward. Characters can also join guilds that would provide access to the guild's private chat channel and the guild bank. Guilds are social groups that are formed for specific purposes. While some of the players join a certain guild for their friends, some of the guilds are formed for tournaments and raids, which are group quests that require up to 40 players to defeat monsters. For this research, the guild system allows the research group to game with the participants and capture the chat logs where argumentative exchanges took place.

While deciding on an avatar, each player chooses from a number of races between the two factions (Alliance and Horde). Alliance faction offers draenei, dwarf, human, gnome, and nightelf while horde faction offers bloodelf, undead, orc, tauren, and troll. More races are added to the alternatives with each expansion set that the production company of *WoW* introduces. The players also choose a class for their avatar – *death knight*, *druid*, *hunter*, *mage*, *paladin*, *priest*, *rogue*, *shaman*, *warlock*, and *warrior*- that brings along different characteristics. *WoW* successfully incorporates players' preferences into its design with specialized talent builds and the availability of different avatar classes, which generate a lot of discussions in official *WoW* forums and synchronous in-game chat. Considering that argumentation skills are not domain specific (Kuhn 1991), the practices such as social argumentation in synchronous chat may demonstrate the level of students' argumentation skills outside of a formal context. The focus of this research is to discover how students are engaging in social argumentation in unstructured online synchronous communication, to investigate the analytic quality of these online social arguments, and to understand what circumstances may help trigger quality argumentation in this context.

Data collection

A social research study cannot be carried out in an autonomous realm that is insulated from wider society and its original practices (Hammersley and Atkinson 1995). The social groups and the values of these groups define and shape the characteristics of a space. Therefore, a

study that includes such spaces should consider the elements that may affect the authenticity of the outcome. Similarly, while investigating an online space, researchers should keep in mind the unique aspects that make it appealing to the users and design the methods of research accordingly. Otherwise, the methods may interfere with the authenticity of the space and obscure the findings. In synchronous *WoW* chat, user control, self-initiated topics, and spontaneity are some of the components that induce online social argumentation. In order to preserve the authenticity and adopt with these unique characteristics, ethnographic methods of research (Hammersley 1990; Hammersley and Atkinson 1995) have been employed to collect data.

The data used in this study comes from a nine-month afterschool program in a mid-sized mid-western town in the US. The program was designed to understand the potential of informal online spaces to leverage practices aligned with school-related content such as reading, computer and scientific skills, and civic engagement. Twenty-two adolescent males between the ages of 12 and 18 who were identified as "disengaged" at school, participated in the program. Some of them had been playing *WoW* for almost a year while there were also beginners in the group. Both in-game (chat logs, in-game field notes, screenshots) and out-of-game (interviews, video captures, pictures) activities have been documented over this nine-month period. For this specific research, I restricted my data to online chat logs to understand how the participants engage in social argumentation spontaneously in synchronous communication. The game allows users to save the chat log as a text file before they log out of the game. After reading through more than sixty pages of text that include the conversations among guild members, I manually marked the conversations that involved the elements required for an argumentative exchange. These parts of an argument are depicted in Table 1 and are further investigated in the Data Analysis Section. Exchanges that did not include the main or second part of an argument did not qualify as an argumentative exchange and are therefore omitted. A total of 27 instances of argumentative exchanges were identified and investigated in chronological order using the coding scheme (Table 2).

More than ten ethnographers, including the author, participated in the data collection process. The ethnographers were graduate students who were also members of the research team. I was one of the leading researchers and participated in the program from the beginning. The ethnographers gamed with the students at certain time slots of the week (more often over the weekends) where they were able to observe the students' behavior in the game and save the chat logs of online communication right before they logged out of the game. The role of the ethnographers during data collection was an important part of the

t1.1 **Table 1** Main theories of argumentation and their identification of the parts of an argument

t1.2 Argument parts	Walton	Kuhn	Toulmin	Leitao
t1.3 Main part: including a claim and supporting evidence.	Argument (Context of discussion)	Argument (Claim + evidence)	Claim + data + warrants	Argument (Claim + evidence)
t1.4 Second part: counter-claims and evidence that refute the initial claim.	Counterargument (Refuting argument)	Counterargument (Refuting argument)	Rebuttal (Refuting the evidence)	Counterargument (Refuting argument)
t1.5 Other			Backings, qualifiers	Reply

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process that allowed me to capture the characteristics of MMO environments without interfering in the students' gaming. While doing ethnographic research, the ethnographers have the flexibility to adopt various roles. Junker (1960) identified these roles as 'complete participant', 'participant-as-observer', 'observer-as-participant,' and 'complete observer' based on the degree of involvement. The role ethnographers took up for this research falls between 'complete participant' and 'participant-as-observer'; not completely incognito to the social group but also fully participated in the affinity group's practices. Unlike ethnographic studies conducted in schools, age is usually not a complication in *WoW* environment because the players in the *WoW* community always vary in age. The ethnographers were specifically informed to comply with the authenticity of the environment (by using the game jargon while communicating with the members or not interrogating the reasons of a player's actions) so that, their presence did not impose any interventions on the students' experiences as well as their conversations during game-play.

Data analysis

In the analysis of discursive argument, the researchers emphasize the distinction between the terms "argument" and "argumentation" (Kuhn 1992; Leitão 2000). While argumentation defines the activity of discussing opposing ideas, argument is used to describe it as a product as part of that discourse. These two definitions that are established to clarify the nuances among theoretical approaches, also influence methods used for the analysis of social argumentation. While most of the theories discussed here recognize the mutual influence between argument and argumentation, analytical models and schemes suggested for the investigation of arguments allude to the inclinations of the authors. For instance, while Toulmin emphasizes the parts of an argument in his analysis, Walton investigates the arguments in relation to their contexts. Leitao considers argumentation process as part of knowledge building and Kuhn analyzes the quality of arguments considering the process of argumentation.

The analysis employed for this research investigates the counterarguments cognizant of the process of argumentation. Table 1 synthesizes the main theories that have been employed in the field of online argumentation. As presented in the table, counterarguments hold a crucial role for all of the theorists. Most of the theorists investigate the elements of counterarguments (for instance; is the counterargument refuting the existing evidence or presenting a new evidence?) or the role counterarguments play in an argumentative exchange to understand the quality of an argument. Therefore, for this research, I use a scheme based on the synthesis of how theorists utilize counterarguments to determine the quality of arguments.

Walton (1989) suggests that engaging in effective argumentation requires two important skills. One is the ability to understand the opponent's point of view with an intention to help solve the issue under discussion. The second is to perceive and evaluate the viewpoints without any biases, examining both cons and pros of the arguments. If these two skills excell, the quality of the counterarguments improves as well. Additionally, he identifies two goals of skilled arguers. First, a skilled arguer analyzes the opponent's argument and secures any evidence that can be integrated into his/her own arguments to strengthen its force. And then, a skilled arguer looks for weaknesses in the opponent's arguments and attacks those points. It is important to note that the arguer should examine the discussant's counterarguments to achieve both goals.

t2.1 **Table 2** Elements of the coding scheme used for the data analysis

t2.2 Elements	Properties	Notes
t2.3 Argument	Claim + evidence	Evidence does not need to be explicitly written in the text, it can be implied or known by the other party. Or the player may display the statistics of an item as evidence.
t2.4 Counter-alternative	Counter-claim + alternative evidence	The weaker form which attacks the opponent's position to reduce its force through introduction of a new criticism to his or her position rather than attacking the argument that the opponent just introduced in support of his or her position
t2.5 Counter-critique	Counter-claim + refuting evidence	More skilled form which directly addresses the opponent's claim and criticizes it to weaken its force.
t2.6 Other	Agreement, disagreement, submission, restatement, etc.	

Kuhn is another theorist who stresses the role of counterarguments in social argumentation. In her joint study with Felton and Kuhn (2001), they develop a scheme based on the strength of counterarguments to analyze the cognitive skills that the participants utilize. The authors identify two types of counterarguments. In the weaker form, counter-alternative, the discussant disagrees with the partner and introduces an alternate argument to the discussion. In the stronger form of counter-argument, counter-critique, does what Walton discusses above and accompanies the disagreement by a critique of the partner's utterance.

Leitao's theory (2000) acknowledges the oppositions as a gateway to acquiring new knowledge. She claims that counterarguments and responses to these counterarguments are the best mechanisms to analyze whether the mutual influence between the speakers leads to cognitive change. Counterarguments help discussants reconsider their points, which evoke meta-cognitive activities. Learners refine and reconstruct their positions through responses to counterarguments. These cycles of knowledge building lead to the acquisition of multiple perspectives and flexible integration of these perspectives into the future discussions (Spiro et al. 1991) rather than the polarization of one perspective (Isenberg 1986). She also indicates that counterarguments do not always oppose an initial claim but sometimes present a different perspective on the same topic. Walton (1996) describes these types of counterarguments as the weaker type of argument compared to the ones that directly attack the grounds of the initial argument. In summary, most of the theories dominating the research of social argumentation emphasize the importance of counterarguments in argumentative exchanges. Counterarguments have been employed in many studies (Duschl and Osborne 2002; Jeong 2003; Kuhn et al. 2008; Leitão 2000) and are demonstrated as the core point for the analyses of quality argumentation.

Among the researchers who focus on computer mediated argumentation, it is commonly believed that unstructured online discussions rarely construct counterarguments (Stegmann et al. 2007). In another study, Felton and Kuhn's (2001) findings suggest that adolescents engage in less sophisticated argumentative discourse skills in comparison to adults. The results of this study refute both of these statements by demonstrating that when adolescents are in an interest-driven conversation with their peers in online *WoW* chat, they do exhibit sophisticated argumentative discourse skills (i.e. skilled counterarguments) even though the

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discussion is unstructured and a facilitator is not present. Steinkuehler and Chmiel's (2006) study supports these findings by suggesting that the use of counterarguments is one of the most prevalent scientific habits of mind exhibited in the asynchronous posts on game-related online forums. The analysis presented in this study promotes their point and extends it to synchronous communication by investigating the properties of counterarguments in online *WoW* chat to understand the quality of the argumentative exchanges. Table 2 outlines the elements and properties that form the basis of the coding scheme used in this research.

Forming on the synthesis of the theories discussed above, I have employed a scheme (See Table 2) based on an adaptation of Felton and Kuhn's (2001) counterargument analysis with roots in Walton's theory (1989). I have looked into the types of counterarguments that participants are using while debating a topic with their peers in the synchronous guild chat. According to this scheme, if the counterarguments are attacking the opponent's argument to reduce its force through introduction of a new criticism to his or her position rather than attacking the argument that the opponent just introduced in support of his or her own claim; this is a counter-alternative. Counter-alternatives are the weaker type of counterarguments since the debater introduces an alternative idea to the discussion. On the other hand, counter-critiques directly address the opponent's claim and refute it by attacking its weaker components. Counter-critiques employ refuting evidence and therefore are ranked as stronger counterarguments.

Coding procedure and examples from the data

After manually going through the recorded chat logs from gaming sessions and identifying the argumentative exchanges, a total of 27 instances were labeled. These instances have been analyzed for their elements and properties as depicted in Table 2 to examine their analytical quality based on the type of counter-argument they employ (counter-critique versus counter-alternative). Each of these instances is hand-coded by the author single-handedly according to the coding scheme. Some of the exchanges were as extended as two pages while some others were no more than a few turns of talk. They are enumerated and analyzed in chronological order. Below, I exemplify some of the shortest and longest exchanges and how they are analyzed using the coding scheme (Table 2). Each instance presents the coding procedure of an argument. The elements of arguments are coded in brackets at the end of each turn of talk. An instance depiction follows, explaining what is debated in each instance, along with contextual descriptions and counterargument analysis. The avatar names as well as the actual names of the participants and researchers are replaced with pseudonyms to protect their privacy. The avatar classes mentioned in the chat logs are italicized. The language used in the chat logs is inserted unaltered to demonstrate the structure of the synchronous chat in *WoW*. A few of the typos that did not affect the flow of conversation are corrected for ease of read. The students employ a great number of abbreviations during chat. The meanings of abbreviations are added next to them in parenthesis. The numbers in front of a line stands for the time a statement is uttered.

Instance 1
19:25:16.267 Gromy: we can use more *shamans* [claim]
19:25:35.747 Darkresolve: eh [disagreement]
19:25:36.313 Tanker: ya [agreement]
19:25:57.558 Tanker: but Betty said later
19:25:59.924 Darkresolve: need more tanks before we worry about more dps imo (in my opinion) [counter-critique]

19:26:53.646 KMart: im a tank [counter-critique]
19:27:08.788 Darkresolve: but u r lvl (level) 11 [counter-critique]
19:27:10.643 Tanker: lvl?
19:27:45.493 Darkresolve: im talking about lvl 70 tanks [counter-critique]

Discussions about avatar classes in the game almost always attract the players. This issue is one of most commonly discussed topics in both public and guild chats. Here, the discussants are debating whether it is a good idea to have more *shamans* in the guild. The debate is particularly about which classes would be more crucial to form a group for an instance with other members. In *WoW*, guild members are the first resource to refer to while looking for an instance group. Therefore, it is important to have a balanced number of classes in a guild. The argument Gromy puts forth gets the attention of Darkresolve who counters the argument by stating that tanks are more crucial for the guild than healers, because tanks would also fill the dps position in a group while teaming up for a group quest.

A strong group formed for a group quest has more advantage if it includes a diversity of classes. Ideally, each group requires one healer (*Priests*, *Shamans*, *Druids*, or *Paladins*) that keeps the tank alive, one tank (*warriors*, *warlocks*, *death knights*, *paladins*) that keeps other group members from being attacked, and dps (*rogues*, *mages*, *hunters*, etc.) to damage the enemy while the tank has the monster's attention. These implicit rules constitute the basis of the debate in Instance 1. In order to make convincing arguments and propose strong evidence, the arguer has to be knowledgeable about these rules. That is also necessary to determine the weaker parts of a claim. Because Darkresolve directly attacks the weak parts of Gromy's argument and refutes it with strong evidence, his counter-argument is a counter-critique, the stronger type of counter-argument. KMart tries to refute Darkresolve's argument by stating that he is a tank and therefore there are enough tanks in the guild. This statement is also a counter-critique because it attacks the premise of Darkresolve's counter-argument. Darkresolve confutes his argument by claiming that low-level tanks are not as useful as higher-level tanks in high-level instances. Note that all counter-arguments in this instance are the stronger type as the discussants are exposing the weak parts of their opponent's arguments and refuting their claims by attacking those parts.

Instance 2 17:55:50.162 Eisenhower: I don't get why alli (alliance) don't get rez (resurrection) sickness [claim]
17:56:10.623 Lycor: they do. [counterclaim]
17:56:54.801 Eisenhower: I made a gnome and every time I rezzed at graveyard I didn't get it [counter-critique]
17:57:10.088 Lycor: no one gets rez sickness until level 10 or so. [counter-critique]
17:57:16.938 Eisenhower: weird [submission]

Instance 2 is an example of the shorter argumentative exchanges. In this instance, both discussants support their arguments with the stronger type of counterarguments. Eisenhower utilizes his experience as evidence to support his argument and refute Lycor's disagreement. However, Lycor finds the flaw in Eisenhower's argument and counter-critiques it while at the same time introduces new information to the debate. After learning this fact, Eisenhower changes his opinion and agrees with Lycor's counter-argument. In line with the studies on the relationship between knowledge level and argumentation (Means and Voss 1996), in the context of *WoW*, there is a positive correlation between the knowledge level and effective

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argumentation. In this instance, it is easier for the player with more content knowledge to see the weaker parts of the opponent's argument and attack them.

Instance 3
22:23:03.645 Evlan: zomg (oh my god)! I love Butcher's Slicer! [argument]
22:23:16.126 Evlan: i crit like 104 [evidence]
22:23:25.525 Sasoder: nice but meteor shard is better [counter-alternative]
22:23:34.259 Eisenhower: Meteor Shard (he displays the stats of the item)
22:23:38.251 Darkresolve: but is rarer [counter-alternative]
22:23:43.086 Eisenhower: yah it is [agreement]
22:23:46.396 Sasoder: ya but better [restatement of counter-alternative]
22:23:54.966 Darkresolve: but not worth the amount of time [counter-alternative]
22:24:07.335 Eisenhower: I got it on my first run [counter-critique]

In the third instance, the participants are discussing the quality of an item named 'Meteor Shard'. In this excerpt, we observe a number of weaker-type arguments (counter-alternative), in which the discussants employ an alternative evidence to support their arguments rather than attacking the weak parts of the opponent's argument. However, the last counterargument that ends the debate is a counter-critique (the stronger type of argument).

Evlan initiates the debate by displaying the statistics of the item 'Butcher's Slicer' and sharing his feelings about it. He backs up his claim by stating how much damage he can cause on his opponent using the item. In *WoW*, players can see or display an item's statistics such as the level, durability and value of the item, easily by linking it in the chat window. Other players who share the same chat window can click on the link to see the item's statistics and a small box displaying the item's properties appears on the screen (See Fig. 1). This property is very often used during item-related debates. The discussants use this property and display the statistics as evidence to their arguments. However, because the display shows all of the information about the item, in cases like instance 3, other players may also use it to strengthen their arguments. Here, Eisenhower displays the statistics of the

Fig. 1 Statistics of the item 'Meteor Shard'

item "Meteor Shard" and Darkresolve immediately realizes that the item is very rare to find. He jumps into the discussion and counters the argument by stating that it is a very rare drop and not worth the amount of time spent searching. At this point, Eisenhower comes up with a better backing and presents a counter-critique where he refutes Darkresolve's argument with a strong counter-argument, that he found it on his first run. And that utterance settles the discussion.

Instance 4 22:23:05.019 Witan: once I get the level, I get a summon epic mount [argument]
22:23:25.119 Sasoder: LOL not that easy [disagreement]
22:23:56.960 Sasoder: it'll be the hardest quest line a *lock* (*Warlock*) can do [counter-critique]
22:24:25.094 Sasoder: and SAVE MONEY [counter-critique]
22:24:26.689 Witan: yes, but I don't require battlegrounds [counteralternative]
22:24:38.788 Mariobro: DK's (*Death Knights*) will be ftw (for the win)
22:24:47.190 Sasoder: do you know what you have to do?
22:25:16.452 Sasoder: I think bgs (battlegrounds) would be 10 times easier than the Dreedsteed [counter-critique]
22:26:18.254 Sasoder: so save money and get good friends in *WoW* it'll be easier [counter-critique]
22:27:31.270 Roarton: I don't suppose the pally (*Paladin*) quest is any easier than the *lock* (*Warlock*) one, is it?
22:27:52.441 Sasoder: nope

This is another instance that includes both weaker and stronger types of counterarguments. Witan argues that he will get his epic mount when he gets to a certain level. In *WoW*, getting an epic mount is a threshold that increases the players' speed up to 100 %. However, it is a difficult task to accomplish. A *warlock*, which is also the class of Witan's avatar, has to finish a chain of quests, called "Dreedsteed," (which includes accomplishing six tasks) and has to pay a certain amount of *WoW* gold in order to receive his epic mount. Sasoder, who is a higher-level player that has experience with the same class (a *warlock*), counter-critiques Witan's argument stating that it is not a very easy task to complete.

In this instance, although the utterance "save money" seems like an advice, the arguer does not really intend to give advice to the player. He is proposing that Witan will need a lot of money to get his epic mount. In a way, Sasoder is refuting or countering the argument in a nice way without offending his opponent. Then, Witan puts forth a counter alternative where he refutes Sasoder's argument by introducing a new fact related to the topic and proposes that the chain quest he has to accomplish does not require battlegrounds, which are special areas for player versus (PvP) player combat. However, Sasoder refutes Witan's counter alternative with a counter-critique by finding and attacking the weak parts of his argument. In this case, he states that battlegrounds would be much easier than the quest chain he needs to accomplish if he had done otherwise. Finally, by the end of the debate, Sasoder repeats his initial claim and strengthens it by adding evidence and stating that having good friends would help Witan with his epic mount either by helping to defeat the monsters or by lending him the money he will need.

Instance 5 17:31:41.250 Roarton: I'm debating continuing this toon right now or making a *hunter* [debate opener: inquiry]
17:32:00.250 Darkresolve: *hunters* are a fast lvl (level) [argument]

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17:32:05.140 Steamroller: *prot pallys* (*Protection Paladin*) are gunna be really good tanks in wotlk (Wrath of the Lich King) [counteralternative]
17:32:11.984 Darkresolve: but you're already lvl 33 [counter-critique→himself]
17:32:17.109 Mariobro: ya but they already r [counter-critique]
17:33:02.078 Steamroller: wotlk instances are based on big pulls and *pallys* r best for them [counter-critique]
17:33:12.343 Eowyn: nice… I love *pally* tanks
17:33:20.375 Roarton: me too

Instance 5 is another exchange with many counter-critiques. This spontaneous debate, which is initiated by a casual question of one of the guild members, generates a number of counter-critiques. Roarton, who is playing a level 33-*paladin* (aka pally), is asking other guild members for opinions on whether he should continue his current avatar or start a different one from another class (a *hunter*). The question raises many opinions, as it is an issue with many possibilities. Darkresolve responds to this inquiry stating that hunters are easy to level. But then he realizes (probably after inspecting his avatar) that Roarton is already at level 33, which is a pretty high level to consider a start over, and counter-critiques his own argument. At the same time, Steamroller opposes Darkresolve by introducing a new fact about the game to weaken his argument. Steamroller includes strong evidence to support his claim and tries to convince Roarton that the *paladins* will be strong tanks with the release of the new expansion; Wrath of the Lich King (WoLK).

Steamroller's argument here should be reiterated to investigate the structure of evidence that the students employ to support their arguments. Although the counter argument is the weaker type (counter alternative), presenting this evidence at this point is a strong move that almost convinces the audience and finalizes the debate. There are two reasons for this. One is, tanks - who take the most damage in a group quest- are very popular in parties that get together to do a group quest or a dungeon. The tanks are intended to soak damage while the other players are causing damage over time (DoT). A strong tank such as *Protection Paladin* is necessary to form a powerful group and they are always in demand in *WoW*. Therefore, using this evidence is a smart move in the debate. The second reason that this argument is convincing is because Steamroller is using information that may not be known by the players who are not well informed about the current news. At the moment of debate, the expansion 'WoLK' had not been released yet. The only way to know about an upcoming expansion is to follow and read about the news related to it, or do some research about what *WoW* players talk about it in the forums. In either case, this strong evidence backed up by subtle data is an important element of the debate.

Following Steamroller's counter alternative, Mariobro opposes his argument saying that *paladins* are already good tanks. Then, Steamroller explains in more detail why *protection paladins* are the most suitable for the instances that are specially designed combat areas in the new expansion, giving another strong evidence that supports his claim. A pull is a talent that pulls a target closer without aggravating the other monsters around. After expressing in more detail that *paladins* are the best for 'big pulls', the debate ends, and we see that Roarton is convinced about continuing his *paladin*.

Instance 6 Part 1 17:46:41.968 Illusion: what's best spec (specialization) for *druid*? [Debate opener: inquiry]
17:46:51.703 Evlan: feral [argument]

17:46:57.531 Mariobro: resto [argument]
17:47:03.218 Evlan: good no [counter-critique]
17:47:04.890 Evlan: god*
17:47:12.109 Evlan: you cant lvl (level) at all being a resto *druid* [counter-critique]
17:47:14.750 Darkresolve: resto = worst for lvling [counter-critique]
17:47:32.703 Illusion: I think boomkin looks cool [counter-critique]
17:47:38.281 Roarton: resto is also one of the easier ones to get a dungeon group for [counter-critique]

Part 2

17:47:47.343 Illusion: isn't that like lvl 30 tho?
17:48:07.843 Steamroller: lvl 40 for boomkin [counter-critique]
17:48:22.843 Illusion: wasn't it lvl 30 b4 (before)?
17:48:32.609 Darkresolve: its lvl 50 [counter-critique]
17:48:49.281 Darkresolve: the lvl 40 spell is swarm from what I remember
17:49:00.156 Illusion: then its 30 [restatement of argument]
17:49:08.093 Darkresolve: what is?
17:49:16.453 Illusion: cause I swear it was
17:49:28.859 Darkresolve: what is?
17:49:34.250 Illusion: boomkin [restatement of argument]
17:49:36.468 Darkresolve: no
17:49:38.671 Darkresolve: its 50 [counter-critique]
17:49:50.656 Illusion: that's stupid [argument]
17:50:05.906 Darkresolve: not rly (really) [counterclaim]
17:50:34.000 Illusion: is that end spell for bc (Burning Crusade-an expansion of the game) then? [inquiry]
17:50:45.453 Miradee: no,
17:50:48.890 Illusion: or was that
17:50:51.703 Illusion: 60
17:50:59.140 Steamroller: lol
17:51:20.703 Darkresolve: I don't even know what you are talking about anymore [confusion]
17:51:28.718 Illusion: nvm [nevermind) [withdrawal]

Instance 6 is an example of a long debate that involves two separate discussions. In the first part, which is initiated with an inquiry, the participants are debating which specialization is better for a *druid* (a class in the game). In *WoW*, each player starts gaining talent points at level 10. They can spend these points on a talent, which is also referred to as a 'specialization' or 'spec', to improve their character. They are given a few options to personalize based on how they would like to style their game play. At this point, they should be aware whether they want to participate in large raids, or play Player versus Player, etc. because each stance requires different personalization. In this instance, they are debating which specialization –*feral*, *restoration*, *or balance*- would be best for a *druid*.

Chimeratech's inquiry attracts many guild members. They each present a different opinion. Evlan suggests *feral druids* are good while Mariobro proposes the *restoration* (resto). Evlan counter-critiques this opinion stating that *resto druids* are difficult to level. Almost at the same time (within two seconds) Darkresolve presents the same counter-

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critique to Mariobro. Roarton responds with another counter-critique to Evlan and Darkresolve's counterargument stating that *resto druids* are easier to get a dungeon group, through which a player can earn fast points and level quickly. Illusion's counterclaim followed by a question cuts this interesting debate short and with the question about the level of boomkin (or moonkin) form initiates the second part of the debate.

The first part of the debate is interesting with many instances of refuting arguments using quality evidence. Fast leveling is one of the key properties of a good class specialization. In order to understand whether a specialization is good or bad for a certain class, or whether a player can level fast with certain specializations, the players should do some research and read about that talent. However, because *WoW* has many different ways to personalize the game play, the online guild discussions host heated debates with many stronger types of counterarguments. This point is elaborated more in the Discussion Section. Here in part 1, Roarton presents a strong counter-critique, where he attacks the foundation of Evlan and Darkresolve's argument by presenting the evidence that *resto druids* are the hardest to level. Roarton refutes their evidence by stating that *resto druids* can easily find a group for a dungeon where they can earn fast points for leveling.

In the second part of the debate, the players are debating the level of *boomkin* form. Illusion thinks that it is level 30, while Steamroller who gets involved in the second part of the debate expresses that it is level 40. Darkresolve proposes that it is level 50 because "lvl 40 spell is swarm". At this point, Illusion's questions start to confuse the debaters. Different players get involved in the conversation trying to resolve the confusion. Finally, Illusion gives up and leaves the topic.

As demonstrated by the above examples, a detailed analysis is carried out to investigate each exchange and the coding scheme is applied to each turn of talk to determine the types of the counterarguments. Participating in the game-play helped me tremendously to identify each code in an instance. It also allowed me to gather the contextual knowledge that I have employed to understand and analyze the motives of an argumentative exchange. While the instance depictions presented above reflect these motives, the Results Section summarizes the findings of the analysis.

Results

Table 3 presents the statistics of the coding results. After investigating the 27 instances where students were involved in argumentative exchanges, a total of 408 turns of talk are coded. A line of utterance between the two time stamps is identified as one turn of talk. In

Table 3 Statistics of the codes applied to the data

Code element	Number of codes
Total number of turns of talk	408
Number of arguments (supported with evidence)	50
Number of counterarguments	121
Number of counter-critiques	98
Number of counter-alternatives	23
Number of agree/disagreement, submission and inquiry (other)	46

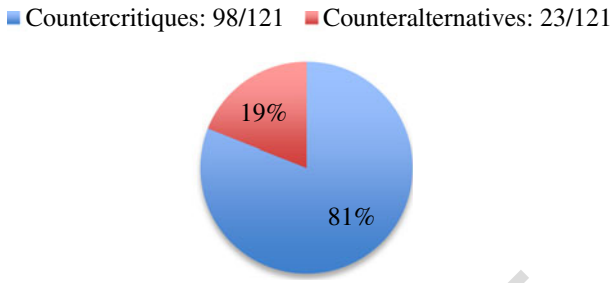

Fig. 2 Percentages of counter-critiques and counter alternatives

many cases, the counterarguments were continued through a sequel of turns of talk. In such cases, the entire sequel is marked as one code (Please see appendix, lines 27–28, 36-37-38, 45-46-47-48 for examples). Therefore, the total number of turns of talk exceeds the total number of lines coded as Counterarguments, Arguments, and Other.

Fifty turns of talk are coded as argument where the student stated a claim supported with valid evidence. These arguments were mostly located at the beginning of an instance and initiated the argumentative exchange. In six of these instances, the students employed inquiries to introduce a topic of discussion (Please see instance 6 in the Data Analysis Section for an example). The students pursued these arguments in 121 counter-arguments.

Figure 2 demonstrates the numbers and percentages of the types of counterarguments. Twenty-three of these counterarguments introduced alternative evidence while refuting the other discussant's position, which implies that 19 % of the time the students used counter alternatives to support their arguments. In the remaining 98 cases, the students presented refuting evidence that directly addressed the weaker parts of the other participant's counter-claim. The number of counter-critiques comprised the 81 % of the overall counterarguments, which implies that roughly in every five counterarguments that students expressed, only one of them was a counter-alternative, whereas the other four were counter-critiques.

It is also important to note the topical distribution of the counter critiques to understand which subjects triggered quality counterarguments. Because game dynamics and rules are very intertwined with each other, it sometimes proved challenging to identify one topic for an entire instance. There is more than one aspect to consider when debating an argument, which led the students to pull evidence from different topics. Therefore, each counter-critique is addressed as one independent item and arranged into a topical category. Some counter-critiques consisted more than one turn of talk as mentioned above. Those cases are treated as one counter-critique.

Out of the 98 counter-critiques employed by the students, 48 of them, almost half of the total counter-critiques, were about issues related to race and the class of the avatars. Gear and armor related debates followed them with 31 counter-critiques. There were 17 counter-critiques related to talent builds of an avatar and finally 7 of them concerned ethics around the game. Figure 3 below demonstrates the percentage of each topic.

Discussion

Being able to develop skillful arguments is a valuable ability that is not easy to accomplish. It requires specific skills to understand if an argument is cogent in a discussion. Previous research paid attention to the argumentative skills that students display in schools and what

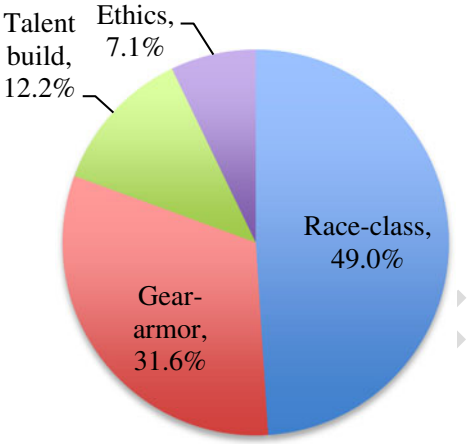

Fig. 3 Percentages of topical counter critiques

technologies can accomplish to help this process. However, little is known about the students' argumentative practices in an unstructured, interest-driven online synchronous communication. This study sheds light on this unexplored area by demonstrating the quality of arguments among a group of adolescent players in *WoW* guild chat and investigates the topical categories that may have triggered the quality of argumentation in light of the findings. It also explores the circumstances in which quality argumentation occurred in *WoW* guild chat.

Quality of arguments

The results demonstrated that out of the 121 counterarguments, 98 (81 %) were identified as counter-critiques. That is, the students were engaging in quality arguments 81 % of the argumentative exchanges. There were 23 instances where they introduced a weaker counter-argument, which constituted the 19 % of argumentative exchanges. The topical distribution of quality counter-arguments revealed that the counter-critiques peak during the debates where the participants are arguing about the issues related to game-related topics. Considering that the participants initiated the discussions in this study, and these topics interest the students, the findings corroborate the current literature suggesting a positive correlation between interest and learning (Hidi 2001; Schiefele 1998; Krapp 1999). Hidi (2001) suggests that well-developed individual interest in an area facilitates learning and comprehension. In her paper, Hidi makes the distinction between individual interest and situational interest. Individual interest slowly develops over time, is long lasting, and is associated with increased knowledge and value (Renninger 2000). On the other hand, anything in the immediate surroundings may appeal a person's situational interest. It is more abstract. It may or may not have an impact on knowledge or values of the individual. The players who propose more counter-critiques in their arguments have mostly been playing higher-level avatars. In a leading online *WoW* forum,[1] players state that the average time they spent to level up an avatar from 1 to 80 is between 5 and 10 days (120–240 h).

[1] http://www.wowhead.com/forums&topic=134299/what-is-the-average-time-played

Considering that a player needs to spend extensive hours to level up an avatar in the game, the players may have developed an individual interest in the game over the long hours they spend playing the game. The players have also accumulated extensive knowledge through reading game-related texts and online forum posts. In another study conducted on the same population by Steinkuehler et al. (2010), the students state that they use online forum posts and game-related texts extensively, which adds to their positive feelings towards the game.

The argumentative discussions that include counter-critiques prevalently present a parallel pattern with the previous research on interest and comprehension. Mason and Scirica (2006) claims that in light of the promising results on the positive correlation between interest and comprehension, it is expected that motivational variables would play a role on argumentation. Alexander and colleagues (1994) report that the students who have knowledge and interest in the topic scored higher in comprehension of a technical text. Similarly, interested students are found to develop deeper representations about the meaning of a text (Schiefele 1996). It has also been noted that the topic interest interacts with topic knowledge and impacts learning from text (Boscolo and Mason 2003). In a similar vein, Steinkuehler et al. (2010) express that the students can read texts that are 7–8 grades above their reading level when they are given the option to choose the text. All of these findings support that individuals perform better in interest-driven activities than the assigned tasks.

The conversations in the guild chat are always interest-driven because they are initiated by a player in the guild chat and are only pursued by other members if they are interested in the topic. The evidence that discussants employ to strengthen their arguments are always referenced and based on facts. Moreover, these discussions take place in an authentic, customizable gaming environment, which appeals to the players' situational interest. This type of situational interest may have an impact on the individual interest (Hidi 2001) which overall enhances the quality of counterarguments.

Debates about race-class issues

Main topics that trigger quality counterarguments in the guild chat are issues related to the race and class of an avatar. When the participants are debating qualities that their avatars possess, or whenever they are trying to prove their avatars' superiority over another race/class, they engage in long arguments with quality evidence. As the data analysis presents, these arguments are more than just on an emotional level. Players are proposing cogent arguments supported with strong evidence. On the contrary, this emotional attachment is one reason that they accumulate more knowledge on the subject and therefore put forth strong evidence based on actual information. The excerpt below is an example of an argument exemplifying race-class debates regarding the power struggle between *mages* and *warlocks*. Mariobro is debating that a level 70 *warlock* should take down a level 67 *mage* in a duel.

> Mariobro: last I checked you got beat by a 67 at 70 which is just flat out embarrassing [argument]
> Shadow: not really. *Mages* are 10 times better dps's than locks [counter-critique]
> Roarton: you also have pets to interrupt his casting, you have dots, and not bad dps, not to mention the added damage from the pet [counter-critique]
> Mariobro: ya about to say that
> Shadow: he has a pet also [counter-critique]

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Mariobro: and locks are one of the classes meant to be able to take down *mages* other then *hunters* [counter-critique]

As discussed previously, the positive correlation between interest and the reading material plays a crucial role in the players' ability to read a higher-level text without losing their motivation. The players accumulate the information published on the online manuals, game updates and forums and use this information to enhance their individualized gaming (Steinkuehler et al. 2010). As the information becomes a part of their gaming experience, the topic raises more interest and they can participate in long debates with their peers about which avatar race or class is better in what ways.

Emotional attachment may be another reason that race/class topics trigger quality counterarguments. Studies suggest that the players see the avatars as a projection of their personalities therefore they become attached to them. Since Turkle's (1995) work on identity construction in Multi User Dungeons, many studies investigated the connection between avatar and identity in virtual worlds (Yee et al. 2011; Rosas and Dhen 2011; Bessiere et al. 2007). These studies support that attachment is not just on an emotional level but also the players in most cases identify themselves through their avatars. The players' personality traits present a positive correlation with how they customize their game play. The study by Yee et al. (2011) shows behavioral patterns and the ways of customization that correlate with the players' identity. They also state that the players' personalities are communicated in virtual worlds through behavioral cues. The *WoW* setting allows players to customize their avatars in many ways. The choice of class and race of an avatar is one of the main decisions that a player makes at the very beginning of the game. Each race and class brings with it the specific ways of gaming strategies. Therefore, the decision made at the beginning of the game affects the whole experience that the players expect to get from the game. Since the customized game-play implies the personality traits of the players, this supports the idea that emotional attachment to the avatar is linked to and even originates from the players' real-world personality. Forty-nine percent of the debates occur around the issues related to the race and class of an avatar. Studies that support avatar and reflection of the personality traits corroborate that the attachment of the participants to their avatars generates the heated debates and quality counterarguments.

The vast number of possibilities to customize the race and class of an avatar is also a factor that almost half of the heated debates are developed around this topic. The structure of the game enables the players to choose from more than one option to individualize their experience. The rules of the game are complicated. When one strategy is chosen, it presents the players with a number of options to proceed, which in turn opens up to other customizations. The structure of the problems that players try to tackle is quite similar to the controversial issues they are presented in a formal classroom debate. There is not one right or wrong answer that concludes the debate but the students pick a side and constitute their arguments based on the idea they support. Debates about talent specializations originate from a corresponding incentive.

Debates about talent specializations

The issues around talent specializations (or talent builds) of an avatar also generate many counter-critiques in the guild chat. Although the overall percentage (12 %) is not as high as the debates around race-class issues, it is a topic where longer argumentative exchanges with many turns of talk are observed. In *WoW*, each avatar at level 10 starts gaining talent points

as the player levels up in the game. These points are spent on talent builds to strengthen the avatar in one area. Thus, they can enhance the character's abilities that they most often practice in the game. Similar to the fact that there is not one perfect race or class in the game, there is not a "best" talent build for any class. Each player chooses to specialize in one ability that suits their individualized game-play. In fact, this approach forms the basis for the debates around talent builds. Because each player has a different way of customizing their avatar, there are many variables that affect the player perceptions. These perceptions influence the quality of evidence that a player proposes in a debate. The exchange below among five players exemplifies a debate about talent specializations. Illusion is inquiring the best talent specialization for a *druid*.

Illusion: what's best spec (specialization) for *druid*?
Evlan: feral
Mariobro: resto
Evlan: good no
Evlan: god*
Evlan: you cant lvl (level) at all being a resto *druid*
Darkresolve: resto = worst for lvling
Illusion: I think boomkin looks cool
Roarton: resto is also one of the easier ones to get a dungeon group for

The counter-critiques peak when the players are debating the topics around talent specializations because the way players specialize their talent trees of their avatars is tied to their personal trajectories and identity development. As mentioned previously, *WoW* offers players a wide palate of options to personalize the game-play, which in turn presents various behavioral cues that we can infer from. Some of these behavioral indicators include doing solo quests, participating in-group activities, choice of playing in the combat areas, and collecting vanity pets. Yee et al.'s study (2011) that employs personality psychology nicely presents the evidence that support such a claim. The Big-5 model that they utilized for the analysis of personality traits aims to demonstrate a number of behavioral patterns including *extraversion*, *agreeableness*, and *conscientiousness*. For instance, players who scored high on *Extraversion* in the real-life personality survey preferred to participate in *Raid* combats and tend to have a higher ratio of Dungeon Achievements (awards that are earned for killing monsters in Dungeons) in *WoW*. On the other hand, players who scored high on *Agreeableness* prefer non-combat activities in the game such as improving their skills in cooking and tailoring. Furthermore, these players use positive emotes such as hugging and cheering more frequently than other players.

How do these personal gaming choices relate to the talent specializations of an avatar? Talent builds are a great way for the players to individualize their gaming experience. After designating the race and class of an avatar, the participants start spending their talent points in the specialization of their character so that they can improve their abilities in accordance with the way they would like to progress in the game. Spending the talent points in a certain direction also provides new abilities to the avatar that fits with the style of gaming the player enjoys most. For instance, if a player enjoys doing *Dungeons* and participating in the *Raids*, after choosing the class of his/her character accordingly, s/he would start spending his/her talent points so his/her avatar has more stamina, has access to more powerful enchants, and gains the abilities to use more powerful weapons. Similarly, if the player is less aggressive, s/he chooses the *healer* position and specializes the talent builds of his/her avatar accordingly, so s/he can accommodate this type of play.

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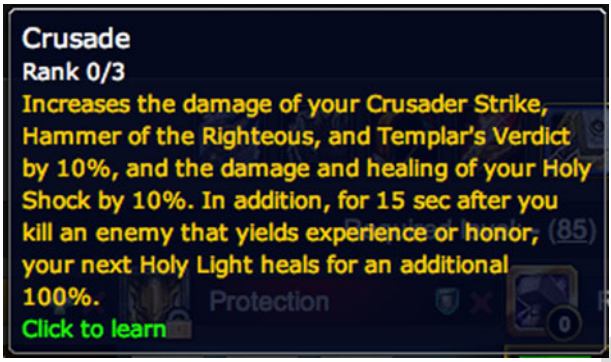

Fig. 4 A text that explains the properties of a talent point

Because talent builds are a way to project the players' identity and personal traits, these debates display great argumentation throughout the data. For example, the excerpt in the appendix represents one of the longest argumentation sessions in the data set, occurring between Evlan and Darkresolve. They go into the intricate details about the "cheap moves" of a *druid* specialized in restoration (Resto), balance, or feral. After the debate gets to a point where they compare a Resto *Druid* -Evlan's avatar- and a warrior –Darkresolve's avatar- the discussion becomes more heated with back-to-back quality counterarguments. Specifically towards the end of debate, Evlan is employing strong evidence and counter-critiques to refute Darkresolve's counter-arguments. Because Evlan is playing a Resto *Druid*, he is very aware of the details of his avatar. His knowledge and attachment to his avatar allows him to propose a strong case and suppress Darkresolve's claims. The ways that the players argue about their avatars depend largely on whether it is a race or class that they can relate to. And the more specialized an avatar becomes in certain ways, the more individualized and personalized the topic of the discussion is. Therefore, it is more likely to project personal traits and generate more heated, elongated, and better quality debates.

Another reason that talent specializations trigger 12 % of the quality counterarguments is due to the importance of prior knowledge and how the students' prior knowledge improves the construction of quality arguments. The accumulation of knowledge in talent specializations requires the players' time and effort. In order to fully comprehend a talent specialization, the players should research sources that give information on the topic. The official website of the game[2] is one of the most reliable and most visited sources. Players who would like to learn about a topic, visit the website and make a detailed review of the text presented there. For each point they spend on a talent, they read a good amount of explanations about the effects of the talent on their avatar. Figure 4 presents a sample text that pops up when clicked by a player.

Additionally, the players need to pay attention to the calculations of the percentages and consider their future moves for the next 10–15 levels while making overall calculations based on those plans because there is a penalty for rebuilding a talent build. This might be a complicated process for some of the players who do not know the characteristics of their avatars well. Therefore, many players make mistakes during the course. Because the players can examine other players' talent builds, they do not hesitate to propound an argument about the talent specialization of another gamer.

The evidence that players employ while arguing about talent specializations is commonly based on the explanations and hints that pop up while building the talent tree. Each square in

[2] www.wowwiki.com

Fig. 5 Example of a warrior class talent build

Fig. 5 represents an ability and comes with the rules that affect and enhance the player's avatar in some way. The players acquire this information on the topic long before the debates. During the debate, this evidence is often referred implicitly as a set of backings in the conversation, which is comparable to the attitudes in scientific argumentation in a classroom (Osborne et al. 2004).

Debates about armor and gear

Armor and gear related issues also provoke heated debates where the participants engage in articulated argumentative exchanges. Comprising the 31 % of the quality counterarguments, the topic is the second most debated in the overall dataset. This issue generates many counter-critiques because of its link to "Flow" (Csikszentmihalyi 1990). Csikszentmihalyi explains *flow* as the state of deep enjoyment where the experiences occur with the activities that are goal-directed, bounded by rules, and require mental energy and appropriate skills. One of the elements of *flow* is described as *control*. He defines control as the ability to exercise a sense of control over actions. In *WoW*, players feel this sense of control by customizing their game-play through actions, avatars, and the tools such as armor and gear. Choosing the appropriate armor and gear is part of this customization and thus the control process. Therefore, the debates on armor initiate many quality counterarguments as they provoke the players' perceptions of the game and how they individualize the game narrative.

The debates on the items and gears in *WoW* mostly include statistical data as evidence. As discussed in the data analysis section, players can see the statistical value of an item when they click on it (Fig. 1). Through a synthesis of the information presented in the dialog box, the player is able to make a judgment on the quality or more appropriately, the usefulness of the item. During these debates, the players thoroughly rely on the *hidden arguments*, the arguments where the participants use links to the statistics of items rather than explicitly

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communicating their arguments in the chat log. Most of the time, these arguments involve links to the gears or items debated (differentiated by the capitalized first letters in the chat log). They are not as lengthy as talent build discussions or arguments on race-class issues. However, these arguments involve evidence as valid and strong as the talent-build debates, grounded in statistical information.

Debates about in-game ethics

Ethical issues such as need-greed discussions and disagreements on dueling in the game evoke interesting debates. Although the contents of these discussions are quite different from the topics of argumentation discussed above, they initiate structurally similar, long discussions in the guild chat. Below is an example of such a conversation.

> Mariobro: stupid *feral druids* needing Band of Renewal AND Crystalfire Staff [argument]
> Illusion: that's a nice staff
> Roarton: Why did they need both?
> Roarton: MAYBE one would be understandable [argument]
> Mariobro: Because he was a kid that shouldn't be playing
> Mariobro: he's feral, lol he shouldn't have needed either when there was a *mage* [counter-critique]

MMO games serve as third places (Steinkuehler and Williams 2006) for socializing and developing relationships. Similar to other social spaces, *WoW* incorporates a set of ethical norms determined by the affinity group (Gee 2003). Although these rules are mostly not explicitly designated, there are many forum debates and online resources considering the issues around ethical decision-making. Very often, the ethical rules are not enforced in the game. However, these games are claimed to have the potential to foster an understanding of how ethical decisions may affect the players' lives, both in and out of game (Simkins and Steinkuehler 2008). As the above excerpt presents, Mariobro is basing his argument on the ethical rule that a *feral druid* should not need Band of Renewal or Crystlefire because a *mage* has the priority to have that gear. These rules are very often stated in official *WoW* forums. They are also acquired through interactions with other players. The analysis of the debates on ethical issues demonstrates that the players are negotiating between the in-game rules and ethics derived from their everyday lives. The players are relying on quality argumentations supported with counter-critiques and strong evidence to reach a consensus between parties.

Conclusion

Ability to argue well has been recognized as an important skill to acquire in both formal and informal settings. The research presented here highlights how the environment and context itself might have an impact on triggering skillful argumentation and ultimately, the cognitive development (Vygotsky 1978).

The results of this study demonstrate the quality of argumentative exchanges among a group of adolescent students in *WoW* chat. The participants of the study, who were identified as 'disengaged' at school and school-related work, engaged in quality argumentation in 81 % of their argumentative exchanges. This study further demonstrates what might trigger the quality arguments in *WoW* chat by investigating the percentages of topical counter-

critiques. The topics that generated quality counter-arguments were 49 % race/class related, 31 % armor/gear related, and 12 % related to talent specializations. In *WoW*, these subjects constitute the three basic areas where the players have the most control over customization. These customizations shape the players' behavior in the game and what they expect from the gaming experience as well as the interactions in the game both with their environment and their peers.

Csikszentmihalyi (1990) explains 'control' as an important element of 'flow' that triggers interest and therefore the intrinsic motivation. In *WoW*, the control players have on their avatar customization and gaming styles increases their interest in game-related topics. Interest and motivation are recognized as undeniable fundamentals of situated learning (Pintrich 1999; Linnenbrink 2002). This principle is valid no matter what the subject area is. Kuhn (1991) stresses that people are more motivated to discuss topics that are of importance to them. Moreover, debating these issues may lead to higher levels of cognitive change as each opposing view plays a crucial role in enhancing argumentative thinking (Leitao 2000). As the findings of this study suggest, whenever the students are engaged in a game related topic whether it is about the class of their avatars, the best talent specialization, or gear-related issues, they engage in long debates dominated with counter-critiques.

Control and customization of the avatar's race, armor, and talent specialization are closely tied to the player's personal traits. Yee et al. (2011) suggests that players customize their avatars to play in certain styles (more aggressive style playing PvP while agreeable style playing non-combat). This generates an emotional attachment to the game and increases the students' individual interest to the topics discussed (Hidi 2001). The prior knowledge and emotional attachment result in debates with better-constructed and articulated counterarguments. The percentages presented in this study corroborate the previous studies on motivation, interest, and their impact on constructing skillful arguments.

Making causal claims about the argumentation skills in online synchronous communication in games is beyond the scope of this research. Although these spaces are interventions for argumentation by exposing the students to arguments whether intended as such or not, this study does not guarantee that gaming environments will always promote quality arguments in synchronous chat. I have presented here the quality of argumentation in a popular but unexposed setting in terms of research. The main implication of this study for online learning environments would be the importance of promoting students' sense of control. This could be achieved by providing them options where they can establish an emotional attachment to the activity and reflect their personal trajectories. Most of the current studies investigate online discussions in a formalized setting where the participants are presented with a topic and asked to argue their opinions within a group. This type of a layout carries the risk of alienating personal attachments from the topic of discussion and interferes with the authenticity of the environment and therefore may conflict the outcome.

For future research, an analysis of the players' knowledge level and whether it affects argumentation skills would demonstrate the learning of argumentation skills over time. Research suggests that there is a positive correlation between domain knowledge and the quality of arguments (Alexander et al. 1994). An analysis of argumentative practices focusing on one of the players might yield valuable results to understand how these settings and interactions between the player and the environment enhance the skills of an individual's argumentation.

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Appendix

20:05:42.123 Steamroller: I don't like *rouges* in my instance groups (argument)
20:05:42.977 Miradee: i've enjoyed questing with Neil's *rogue* to be sure (disagree)
20:05:50.206 Miradee: why's that Steamroller?
20:05:50.433 Evlan: I can easily take 3 or 4 lvl 67-69 (counter-critique)
20:06:14.237 Darkresolve: and if you can't, you just vanish! (counter-critique)
20:06:22.430 Evlan: lol yp
20:06:26.950 Evlan: yup*
20:06:28.919 Darkresolve: cuz *rogues* r cheap (argument)
20:06:40.039 Miradee: meaning?
20:06:47.833 Steamroller: I can easily take like 9889010717810871401989807089678967969 6.14159 repeating ofcourse as long as they not casters :P (counter-critique)
20:07:15.905 Evlan: so Steamroller, what do you mean by cheap?
20:07:18.168 Darkresolve: meaning *stun lock*
20:07:44.171 Darkresolve: rogues r only good pvp class if they get the 1st hit (counter-alternative)
20:07:58.555 Evlan: true
20:08:08.079 Darkresolve: *mage* = cheap as well (new argument)
20:08:54.149 Steamroller: psh all classes have their "cheap" moves (counter-alternative)
20:09:05.164 Evlan: true (agree)
20:09:07.446 Darkresolve: yah, what's a *warrior's* then? (counter-critique)
20:09:09.270 Evlan: except *druids* (counter-critique) (partial agreement to Steamroller)
20:09:13.426 Evlan: *warrior* and *druids*
20:09:13.964 Miradee: that's a good assessment
20:09:28.999 Darkresolve: *druid* have *heals* } (counter-critique)
20:09:38.908 Darkresolve: and cheetah
20:09:41.012 Evlan: not cheap though } (counter-critique)
20:09:49.291 Evlan: healing touch is like a 3.5 sec
20:10:13.238 Darkresolve: pfft
20:10:18.653 Darkresolve: more like 2 seconds (counter-critique)
20:10:43.445 Darkresolve: *pyroblast* is like 3.6-second spell (evidence)
20:10:48.423 Evlan: it's a damn good heal though (counter-alternative)
20:10:52.571 Darkresolve: my point
20:11:02.606 Darkresolve: they can heal to full and run away (counter-critique)
20:11:08.297 Darkresolve: or swim
20:11:38.791 Evlan: but they're squishes
20:11:41.813 Evlan: they have cloth } (counter-alternative)
20:11:48.453 Evlan: so DoTs (damage over time) are like their worse enemies
20:11:48.707 Darkresolve: they're leather not cloth (counter-critique)
20:11:55.502 Evlan: *ferals* are leather } (counter-critique)
20:12:00.843 Evlan: *balance* and *resto* are cloths
20:12:12.287 Darkresolve: yah but they can still wear leather (counter-critique)
20:12:16.154 Evlan: I know
20:12:24.616 Darkresolve: then why did you say they wear cloth?
20:12:27.299 Evlan: but if they want more stats, ie *intellect* and *stamina* they go cloth } (counter-critique)
20:12:30.992 Evlan: they can go both
20:12:39.081 Evlan: mainly *balance* and *resto* are cloth
20:12:43.676 Darkresolve: there is *moonkin* leather (counter-critique)
20:13:01.398 Evlan: yeah but it increase armor by 400% so what diff?
20:13:11.604 Evlan: and you get more *intellect* off of cloth then leather } (counter-critique)
20:13:16.889 Evlan: leather has very little
20:13:25.463 Evlan: boots for instance would have like +15
20:13:37.294 Evlan: cloth boots would have like +30
20:13:45.480 Darkresolve: huh
20:13:47.729 Darkresolve: wow... } (submission)
20:13:50.280 Darkresolve: this is sad

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