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Motivational developments in primary school: Group-specific differences in varying learning contexts

Hornstra, T.E.

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CHAPTER 5

STUDENT PERCEPTIONS OF INNOVATIVE LEARNING AND THEIR LEARNING PREFERENCES: THE ROLE OF GENDER, SOCIO-ECONOMIC BACKGROUND AND ETHNICITY ¹

Abstract The present study examined how students' perceptions of innovative learning (i.e., collaborative, self-directed, and authentic learning, and innovative assessment), their learning preferences, and the alignment between students' perceptions and learning preferences varied by gender, ethnicity, and socio-economic background. Forty-five grade six students and their teachers from nine different primary schools that varied in student population and instructional methods were interviewed. Student perceptions of the actual learning environment were mostly in line with teacher perceptions. No gender differences in students' perceived or preferred learning environment were found. Ethnic minority and low SES students, in comparison to ethnic majority, middle, and high SES students, perceived their learning environment as more traditional and were also more likely to express preferences for traditional education. For most students, perceptions of the actual learning environment aligned well with their learning preferences, and no group differences in alignment were found. These outcomes suggest that teachers adapt their instructional strategies to their student population to create an optimal person-environment fit for their students.

Keywords: *learning preferences, learning environment, student background, gender*

¹ Based on Hornstra, L., Van der Veen, I., Peetsma, T., & Volman, M. (submitted). Student perceptions of innovative learning and their learning preferences: The role of gender, socio-economic background and ethnicity

INTRODUCTION

Learning preferences have been referred to as “inclinations toward the type of strategies and structures students believe would optimize their learning” (Ellison, Boykin, Tyler, & Dillihunt, 2005, p. 699). These can refer to preferences for individual or collaborative learning (Johnson & Engelhard, 1992), but as learning environments can also vary with respect to the extent of self-directed learning (i.e., Land & Hannafin, 2000), authentic learning (i.e. Wilson, 2011), or type of assessment (i.e., Birenbaum & Dochy, 1996), the definition of learning preferences can also be extended to those aspects of the learning environment. Collaborative, self-directed, and authentic learning and innovative assessment are aspects of innovative learning environments. They can be contrasted with traditional learning environments (Simons, Van der Linden, & Duffy, 2000). The correspondence between students’ learning preferences and their actual learning environment has been argued to have implications for students’ progress (Fisher & Fraser, 1983; Johnson & Engelhard, 1992). When schools are able to provide students with a learning context that fits with their needs, skill levels, interests, and preferences, they provide an optimal environment to motivate and engage students in learning. This has been referred to as the ‘person-environment fit’ perspective (Eccles & Roeser, 1999; 2011; Hunt, 1975; Roeser, Eccles, & Sameroff, 2000).

Students from ethnic minority and economically disadvantaged backgrounds are persistently characterized by lower achievement outcomes (e.g., Park & Sandefur, 2010; Roeleveld et al., 2011) and according to some, in recent years also a gender gap has emerged to the disadvantage of boys (e.g., Driessen & Van Langen, 2011; Epstein, Elwood, Hey, & Maw, 1998; Steinmayr & Spinath, 2008; Tyre, 2006). Eccles and Roeser (1999) argued that understanding group differences with regard to gender, ethnic and socio-economic background as an extension of the ‘person-environment fit’ perspective will help to explain such differences in school achievement. In the present study, it will therefore be examined to what extent students’ perceptions of their actual learning environment and their learning preferences vary by gender, ethnicity, and socio-

economic background. Moreover, it will be examined whether alignment between students' learning preferences and their learning environment differs by gender, ethnicity, and socio-economic background.

INNOVATIVE LEARNING

Collaborative learning, self-directed learning, authentic learning, and innovative forms of assessment can be grouped under the umbrella term innovative learning. Innovative learning (IL) refers to a variety of instructional approaches –also been referred to as new learning, natural learning, powerful learning, or active learning – that allow for a more active role of students in their own learning process compared to more traditional approaches (Hickey, 1997; O'Donnell, 2012; Schuitema, Peetsma, & Van der Veen, 2011; Simons, Van der Linden, & Duffy, 2000; Wilson, 2011). In recent decades, IL environments have become increasingly popular (Wilson, 2011). The theoretical basis of IL lies within socio-constructivism, which describes a wide range of views that share the basic assumption that learning can be defined as an active and social process of constructing knowledge and meaning rather than merely a process of knowledge transmission (Duffy & Cunningham, 1996; Gijbels, Van de Watering, Dochy, & Van den Bossche, 2006; Loyens & Gijbels, 2008; O'Donnell, 2012; Phillips, 1995; Wilson, 2011). In practice, most schools cannot be considered strictly innovative or strictly traditional. IL is a multifaceted concept which entails multiple aspects and schools can vary along a continuum on each of these aspects (Duffy & Cunningham, 1996; Loyens & Gijbels, 2008; O'Donnell, 2012; Phillips, 1995; Wilson, 2011)

The principles of socio-constructivism suggest a different role for teachers in IL environments in comparison to traditional learning environments. Teachers in IL environments focus more on collaborative learning in order for students to construct knowledge in interaction with each other (De Corte, Verschaffel, & Masui, 2004; De Lisi & Golbeck, 1999; Gijbels et al., 2006). Moreover, in IL environments, students mostly direct their own learning in contrast to more traditional learning environments in which the teacher mostly directs the

learning process (Bolhuis, 2003; Fosnot, 1996; Gijbels et al., 2006; Land & Hannafin, 2000; Phillips, 1995; Simons et al., 2000; Wilson, 2011). Furthermore, teachers in IL environments provide students with authentic and meaningful learning experiences to elicit a more active learning process in their students (Gijbels et al., 2006; Loyens & Gijbels, 2008; Roelofs & Terwel, 1999). Finally, in order for assessment to connect to these innovative ways of teaching, assessment methods differ from traditional assessment methods. Teachers in IL environments assess student progress in formative rather than summative ways (Birenbaum & Dochy, 1996; De Kock et al., 2004).

PERCEPTIONS OF THE ACTUAL LEARNING ENVIRONMENT, LEARNING PREFERENCES, AND STUDENTS' GENDER, ETHNICITY, AND SOCIO-ECONOMIC BACKGROUND

In line with the 'person-environment fit' perspective (Eccles & Roeser, 1999; 2011; Hunt, 1975; Roeser, et al., 2000), students will be more motivated and perform better when their learning environment suits them in terms of their interests, needs, developmental stage, skill levels, learning style. Fisher and Fraser (1983) for example found that students' achievement was higher when students' preferences on various dimensions, such as teacher control and innovation, corresponded better to students' perceived learning environment. More recently, Chang, Hsiao, and Chang, (2011) demonstrated that when learning environments in science teaching were congruent with students' preferences for student- or teacher-centered education, motivation and achievement were higher. Likewise, Könings, Brand-Gruwel, and Van Merriënboer (2011) showed that more alignment between students' perceptions of actual and preferred degree of powerful learning was associated with higher motivation.

Students' learning preferences are important because the effects of education on students are not unidirectional. Students shape their own experiences based on "what they bring to school" and through their subjective perceptions of the learning context (Eccles & Roeser, 1999). Learning environment research has increasingly focused on students' perceptions of the environment (e.g., Dart,

Burnett, Purdie, Boulton-Lewis, Campbell, & Smith, 1999; Fraser, 2012; Gijbels et al., 2006). In research that includes student perceptions of the learning environment, often these perceptions of the learning environment are aggregated (Frenzel, Pekrun, & Goetz, 2007). Although this can provide insight on shared views of the learning environment, students' perceptions of the same learning environment can also differ from each other, as they are formed by a combination between the actual learning context and individual student characteristics (Dochy, Segers, Van den Bossche, & Struyven, 2005). In order to examine whether the actual learning environment, as well as the fit with students' learning preferences, differs by gender, ethnicity, and socio-economic background, it is important to first establish the extent to which student perceptions of their learning environment represent a shared view. By comparing individuals' student perceptions of the actual learning environment within a class with each other and to the perceptions of their teachers, an attempt is made in the present study to get a better understanding of the extent to which the learning environment indeed varies between students and whether there is a relationship with students' background characteristics.

Understanding group differences with regard to gender, ethnic and socio-economic background in perceptions of the actual learning environment, learning preferences, and the alignment between those as an extension of the 'person-environment fit' perspective could thus help to explain differences in school achievement (Eccles & Roeser, 1999). Previous research has given some indications that the extent to which IL fits with students individual characteristics may indeed be related to students' gender, ethnicity, and socio-economic background. IL environments require active, self-directive, and collaborative types of participation and the academic language required for such learning activities is less typical for interactions in low SES and ethnic minority families (Leseman & De Jong, 2001; Leseman, Scheele, Mayo, & Messer, 2007). Particularly those students from lower socio-economic backgrounds or ethnic minority students with backgrounds from collectivist cultures are believed to be accustomed to more directive, stringent parenting styles (Frosh, 2004; Hermans, 1995; Shucksmith, Hendry, & Glendinning, 1995; Stewart & Bond, 2002).

Types of communication that are required in IL, such as asking why questions or expressing a different opinion, are less likely to be encouraged in their home environments (Heemskerk, Brink, Volman, & Ten Dam, 2005; Pels, Nijsten, Oosterwegel, & Vollebergh, 2006). Moreover, in some socio-economic and ethnic groups, students' and parents' learning preferences have been found to be quite incongruent with learning preferences of teachers (Tyler, Boykin, Miller, & Hurley, 2006). Due to such differences in language, communication style or cultural values, it has been argued that ethnic minority or low SES students may profit less from learning environments in which they have to self-direct their own learning (Kitayama, Snibbe, Markus, & Suzuki, 2004; Littlewood, 1999; Markus & Kitayama, 1991). Iyengar and Lepper (1999) for example showed that higher levels of student responsibility increased task motivation of Anglo American children, but Asian children were more motivated when trusted authority figures made choices for them. Likewise, a study by Chizhik (2001) showed that African-American students participated less and learned less from collaborative learning than European-American students due to differences in communication style.

Research on gender differences with respect to IL has mainly focused on students' learning preferences. Johnson and Engelhard (1992) for example found that girls tend to prefer collaborative learning more than boys. Philbin, Meier, Huffman, and Boverie (1995) studied learning environment preferences of adult learners, and found men to prefer more traditional learning environments. These results suggest that boys may prefer traditional education whereas girls may prefer IL. Demirbas and Demirkan (2007), on the other hand, did not find any differences in learning style preferences between male and female learners. In their review, Severiens and Ten Dam (1997) described that gender differences in learning styles are quite small on average, but there is much variation across studies.

RESEARCH QUESTIONS

The present study is aimed at examining whether students' perceptions and learning preferences with regard to various aspects of IL (i.e. collaborative learning, self-directed learning, authentic learning, and innovative assessment versus traditional education), as well as the alignment between perceptions and preferences vary by gender, ethnicity, and socio-economic background. To first get an understanding of the extent to which students' perceptions of the learning environment represent a shared understanding, the following research question was addressed:

1. To what extent is there agreement with regard to their perceptions of the actual learning environment as traditional or innovative of students within the same class and agreement with their teachers' perception?

Next, the following research questions were examined:

2. To what extent do student perceptions of the actual learning environment as traditional or innovative relate to students' gender and socio-economic and ethnic background?
3. To what extent do students' preferences for traditional or innovative learning relate to students' gender and socio-economic and ethnic background?
4. Do discrepancies between students' perceptions of the learning environment as traditional or innovative and their preferences for traditional or innovative learning relate to students' gender and socio-economic and ethnic background?

To get a more thorough in-depth understanding of student (and teacher) perceptions of the actual and preferred learning environment, these were examined qualitatively through interviews.

METHOD

PARTICIPANTS

Nine grade six teachers and 45 students at nine different schools throughout the Netherlands participated in this study. In grade six, students are eleven to twelve years old. It is the last year of primary school. The sample was selected from a sample of 37 classes from 25 schools participating in a larger quantitative study about innovative teaching methods. Compared to other countries, schools in the Netherlands are rather autonomous with regard to their instructional approach, as long as they meet certain achievement standards (Scheerens, Luyten, & Ravens, 2011). Consequently, differences can arise in instructional approaches between schools and schools can vary from traditional to innovative. Selection for this study was based on self-report teacher questionnaires with the intention the sample would represent maximum variation from teachers that used mostly innovative to mostly traditional teaching methods.

Ethnicity was one of the main background characteristics in this study and there were relatively few ethnic minority students participating. Therefore, within each class, five students were selected through stratified sampling based on students' ethnicity. All ethnic minority students in classes with only few ethnic minority students were selected for interviewing and in classes with many ethnic minority students, they were randomly selected. Beforehand, schools had provided information on the ethnic origin of students' parents. In total, 14 ethnic minority students were selected. The ethnic majority students ($N=31$) were selected randomly from each class. Even though the group of ethnic minority students consists of students with backgrounds in a wide variety of countries, these students have in common that they are from immigrant backgrounds, usually speak Dutch as a second language, and on average these groups usually tend to lag behind in school compared to Dutch background students (Driessen, Mulder, Ledoux, Roeleveld, & Van der Veen, 2009). Because of these similarities, these students are often treated as one group in educational policies and they were treated as one group in the analyses

of this study as well. Twenty-four students were boys, twenty-one students were girls. Parental educational level was considered an indication of students' socio-economic status (SES). Three groups were distinguished based on the highest educational level attained by either of the parents, low SES ($N=9$), middle SES ($N=14$), and high SES ($N=15$). Of seven students SES information was missing. Six of these students were students with an ethnic minority background. For the other students, it was found that ethnicity was equally distributed over the SES groups ($\chi^2(2)=2.282$, $p=0.319$). Table 1 provides background information on the participating students separately for each class.

Table 1.

Frequencies of background characteristics of participating students

School	<u>Gender</u>		<u>Ethnic background</u>		<u>Socio-economic status</u>			
	boy	girl	majority	minority	low	middle	high	unknown
A	2	3	3	2	0	2	3	0
B	3	2	4	1	0	3	2	0
C	3	2	0	5	0	0	0	5
D	2	3	4	1	1	3	1	0
E	4	1	4	1	3	1	1	0
F	2	3	4	1	2	0	3	0
G	3	2	3	2	1	2	0	2
H	2	3	4	1	1	1	3	0
I	3	2	5	0	1	2	2	0
Total	24	21	31	14	9	14	15	7

INTERVIEWS

A single semi-structured in-depth interview was conducted with each student and each teacher. Halfway through the school year, they were interviewed at their own schools by either the main researcher or a trained research assistant.

The student interviews lasted 25 to 40 minutes and teacher interviews lasted 45 to 60 minutes. The advantage of using interviews for this study is that participants could describe in their own words how they perceived the learning environment and express how they would prefer their learning environment to be. Moreover, conducting interviews allowed for elaboration by the participants and allowed the interviewer to check whether questions were understood and ask for explanations or clarifications.

During the interviews, the students and teachers were presented with four similar vignettes (see appendix A) describing schools that varied from very traditional to very innovative on different aspects of innovativeness (i.e., collaborative learning, self-directed learning, authenticity of learning, and use of innovative assessment). The aim of the vignettes was to create a common understanding of these aspects of innovativeness. To gain insight in perceptions of the actual learning environment, the participating teachers and students were asked to indicate for each aspect to what extent their learning environment resembled the schools from the vignettes and they were encouraged to give explanations and examples. Moreover, after each vignette, students were asked whether they would prefer the more traditional or more innovative school on the vignettes, and why they would prefer that. Again, students were encouraged to give explanations and examples.

CODING

All interviews were transcribed for analysis. All interviews were conducted in Dutch and analysed in Dutch. NVivo 9.2 was used to code and organise the data. NVivo allows for blind coding and cross-tabulation afterwards. Consequently, student and teacher responses could be coded blindly without regard for the background characteristics of the students, to prevent potential bias.

For each vignette, student and teacher perceptions of the learning environment were coded in three possible categories: 1) mostly traditional, 2) mixed (combination of traditional and innovative), and 3) mostly innovative. A coding

format with three categories was found to be the most suitable, because many responses, especially student responses, were not fine-grained enough to code into more categories. A detailed description of how responses on each aspect of IL were coded is provided in appendix B. Table 2 gives examples of perceptions on different aspects coded as traditional, mixed, and innovative.

Table 2.

Examples of perceptions on different aspects of the learning environment coded as traditional, mixed, or innovative

Perception	Fragment of response
Traditional	<i>"We mostly have [tests] And we don't have such a thing like a portfolio. . . . We get a report card, with grades and sometimes letters."</i> (School G, boy, Dutch, low SES, response on innovative assessment)
Mixed	<i>"We have a calendar with weekly assignments so to say. And we get instruction for math and language. Beforehand we have to finish that, but we can decide ourselves what we want to do first But when we're doing math and language, everything else has to give way."</i> (School H, student 2, boy, Dutch, high SES, response on self-directed learning)
Innovative	<i>We do [collaborate] a lot . . . Shorter and longer assignments. . . . We always pick a leader, and a [note taker] and together we have to work on the task. . . . We did that for example with math, with an assignment on ice skating."</i> (School E, boy, ethnic minority student, low SES, response on collaboration)

Moreover, after each vignette, students were asked about their preferred learning environment. They were asked which type of instruction they would prefer and why. In line with the coding of the perceptions of the actual learning environment, the preferences were also coded as 1) mostly traditional, 2) mixed (combination of traditional and innovative), and 3) mostly innovative. Appendix B also provides a detailed description of the coding of the preferences. Table 3 gives examples of students' learning preferences coded as traditional, mixed, and innovative.

The first author and the trained research assistant both coded 10% of the interview data independently. Full agreement was reached on 68% of individual codes. The statements where full agreement was not reached were discussed. After examining and discussing disagreements again and refining the coding scheme further, another 11% of interview data was then independently recoded and final inter-coder agreement was 85%. Subsequently, all data was coded by the first author according to the refined coding scheme.

Table 3.

Examples of learning preferences with regard to different aspects of the learning environment coded as traditional, mixed, or innovative

Preferences	Fragment of response
Traditional	<p><i>“Yes, we have to make quite a lot of tests. . . . I think it’s handy. . . . And it’s not like I’m going to cry if I make a mistake. When I have a test, I put in more effort and I’ll think really hard. And I’ll get high grades, which I’ll than be proud of.”</i> (School C, girl, ethnic minority student, SES unknown, response on innovative assessment)</p>
Mixed	<p><i>“Sometimes I prefer to work alone, than I can concentrate better, but I also like to work together. . . . I don’t really like making an assignment or preparing a presentation together, cause you have to adjust to how the other one wants to do it. When you work alone, you can do it as you like. . . . But you can learn very much from working together. When one person knows a lot, you can learn from that person .”</i> (School H, girl, ethnic minority student, high SES, response on collaborative learning)</p> <p>Question: <i>“What if your school would look more like school A and you get to decide when you want to work on a subject? How would you feel about that?”</i></p>
Innovative	<p>Student: <i>“We used to do that, but I like this much better. Like I said before, it’s nicer when you can plan it yourself. For example, when you are writing together with the whole class, and you don’t feel like it, you’ll probably won’t do your best. And now you can just plan it yourself, when you want to do it, and that is much nicer.”</i> (School D, girl, Dutch, medium SES, response on self-directed learning)</p>

ANALYSES

After coding, first the correspondence between students within the same class in their perceptions of the actual learning environment was examined. For each separate aspect of innovativeness, Spearman's rank correlation for all pairs of students within the same class was calculated and averaged. The correspondence between students and their teachers was examined through calculating Spearman's rank correlation for each aspect of innovativeness. Through qualitatively examining the content of the interviews by comparing responses in classes with varying degrees of agreement, an attempt was made to explain differences between teachers and students, or students within the same class.

Next, it was examined how student perceptions of the actual learning environment and their preferences for innovative versus traditional learning related to student gender, ethnicity, and socio-economic background. Because the number of responses was too small to examine group differences for each aspect of innovativeness separately, it was examined whether the frequency of responses on all four aspects related to background characteristics. For both student perceptions and their preferences, each student had a maximum of four responses coded (as traditional, mixed, or innovative). These responses were cross-tabulated with student gender, ethnicity, and socio-economic background. Chi-square tests indicated whether students' perceptions and preferences significantly related to their background characteristics.

Finally, discrepancies between students' perceptions and their learning preferences were indirectly derived from the coding of their perceptions and learning and were compared for each aspect of innovativeness. Because the number of responses was too small to examine group differences in discrepancies for each aspect of innovativeness separately, for each student, the average discrepancy was calculated. These scores can thus be considered continuous as they are formed by averaging multiple indicators. Again, the content of the interviews was examined for a more in-depth understanding, by comparing responses with varying degrees of discrepancies. To compare the

size of the average discrepancy score across groups, t-tests were conducted for comparing ethnic minority and majority students and boys and girls. To compare the three SES groups, a one way ANOVA test was conducted.

RESULTS

Table 4 shows the descriptive statistics of each aspect of innovativeness for students and teachers separately. The results demonstrate that for collaborative, self-directed, and authentic learning, student and teacher perceptions ranged from traditional to innovative. With regard to innovative assessment, variation was smaller, as none of the students or teachers described the assessment practices to be innovative. All teachers regularly administered formal tests and felt required to do so because of official regulations, like teacher E indicated “*We are obliged to do formal assessments three times a year.*”.

Table 4.
Percentages and frequencies of perceptions of Collaborative Learning (CL), Self-directed learning (SD), Authentic Learning (AU), and Innovative Assessment (IA), displayed separately for students (N=45) and teachers (N=9)

	Students' perceptions			Teachers' perceptions		
	Traditional % (N)	Mixed % (N)	Innovative % (N)	Traditional % (N)	Mixed % (N)	Innovative % (N)
CL	11.1% (5)	33.3% (15)	55.6% (25)	33.3% (3)	11.1% (1)	55.6% (5)
SD	31.1% (14)	31.1% (14)	37.8% (17)	33.3% (3)	11.1% (1)	55.6% (5)
AU	17.8% (8)	62.2% (28)	20.0% (9)	11.1% (1)	66.7% (6)	22.2% (2)
IA	55.6% (25)	42.2% (19)	0.00% (0)	66.7% (6)	33.3% (3)	0.00% (0)

Table 5 provides an overview of correlations between different aspects of innovativeness. Student perceptions on collaborative, self-directed, and authentic learning correlated positively to each other. Student responses on innovative assessment did not correlate significantly with the other aspects of innovativeness, which may relate to the small range in scores. With regard to teacher responses, different aspects of innovativeness correlated significantly with each other, suggesting that different aspects of innovativeness were rather consistent with each other.

Table 5.

Spearman rank correlations between the different aspects of IL for students (above the diagonal) and teachers (below the diagonal).

	CL	SD	AU	IA
CL	-	0.60*	0.31*	0.24
SD	0.92*	-	0.43*	0.23
AU	0.59 ⁺	0.59 ⁺	-	0.08
IA	0.61 ⁺	0.61 ⁺	0.27	-

** $p < 0.01$ *, $p < 0.05$, + $p < 0.10$.

AGREEMENT BETWEEN TEACHER AND STUDENT PERCEPTIONS OF ACTUAL LEARNING ENVIRONMENT

It was examined to what extent perceptions of the learning environment of students within the same class corresponded to each other and to their teachers' perception. Table 6 shows Spearman rank correlations for agreement between students within the same class and the agreement between teachers and students for each aspect of innovativeness.

Table 6.

Spearman rank correlations for agreement between students within the same class and between teachers and their students.

	Agreement students ²	Agreement teacher and students
CL	0.39	0.44*
SD	0.80	0.80**
AU	0.19	0.24
IA	0.53	0.59**

** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

For collaborative learning, Spearman's rank correlation was 0.44 ($p=.002$) for agreement between teachers and their students and 0.39 for agreement between students within the same class, indicating that there was moderate agreement on the level of collaborative learning. As indicated by the frequencies, teachers were a bit more likely to describe the learning environment as high in collaboration than students. Only at one school, school G, there was low agreement between the teacher and her students. The students indicated a medium to high level of collaboration (scored as mixed or innovative) whereas this teacher indicated a low level of collaboration. From the responses it seemed like this teacher and her students had a different frame of reference. In this particular instance, the students felt they worked together relatively often, mostly because they were working together on a bigger group assignment at the time of our visit. However, such group assignments were very exceptional at this school, according to the teacher. It furthermore appeared that this teacher was used to a much higher level of collaboration at her previous school, as illustrated below.

"I come from a school like school B, this is not common here, we're working on that. . . . Collaboration is at a minimum here." (Teacher G)

² Significance of the agreement between students could not be indicated, as they are formed by averaging the Spearman correlations between students within classes.

With regard to self-directed learning, Spearman's rank correlation was 0.80 ($p < .001$) for agreement between teachers and their students and also 0.80 for agreement between students, indicating that there was high agreement on the level of self-directed learning. Furthermore, also for self-directed learning, teachers seemed a bit more likely than students to rate the learning environment as innovative.

The agreement on authentic learning between teachers and their students was not significant ($r_s = 0.24$; $p = .108$). The agreement between students within the same class was also quite low ($r_s = 0.19$). These results indicate that students differed in their perceptions of authentic learning. Some students felt that what they learned connected to their daily lives and to real world situations, whereas other students within the same class did not share that feeling, suggesting that the level of authenticity is something that can differ for individuals or can be differently perceived, rather than an objective classroom characteristic. This is illustrated by the statements below by two students from the same class who were both asked whether the lessons or assignments were ever about things that happened to them in real life.

Student 1: *"No, actually never"* (School B, student 1, boy, Dutch, high SES)

Student 2: *"Yes, because ... sometimes people come into the classroom and tell us about food, or the police tells us about traffic."* (School B, student 2, girl, Dutch, medium SES)

Finally, there was moderate agreement between teachers and their students ($r_s = 0.59$, $p < .001$) and between students within the same class ($r_s = 0.53$) on innovative assessment. In conclusion, the degree of agreement between teachers and students varied by aspect of innovativeness, but with the exception of authentic learning, teachers and students showed moderate to high agreement on different aspect of innovativeness.

STUDENTS' PERCEPTIONS OF THE ACTUAL LEARNING ENVIRONMENT AND RELATION WITH STUDENTS' GENDER, ETHNICITY, AND SOCIO-ECONOMIC BACKGROUND

Because the number of responses was too small to examine group differences for each aspect of innovativeness separately, it was examined whether the frequency of responses on all four aspects related to background characteristics. Each student had four responses coded, one for each vignette, only for one student one of the four responses could not be coded, making the total number of responses 179. Most responses of students on their perceptions of the actual learning environment were coded as mixed, i.e., in between innovative and traditional ($N=76$), while responses coded as traditional ($N=52$) or innovative ($N=51$) were both coded a little less frequently.

First, a comparison was made between boys and girls. Figure 1a shows the proportion of responses indicating traditional, mixed, or innovative perceptions of the learning environment. Although boys were twice as likely as girls to perceive their learning environment as traditional on the various aspects (32% of responses coded as traditional versus 16%), results showed that the differences between boys and girls were not significant ($\chi^2(2)=5.73$, $p=0.057$), suggesting that boys and girls seemed to perceive features of the learning environment in a rather similar matter.

Next, it was examined whether perceptions of the learning environment related to students' ethnicity. Figure 1b shows the proportions of responses coded as traditional, mixed, or innovative for both groups separately. Results demonstrated that ethnic minority students were more likely to perceive aspects of their learning environment as traditional and less likely to perceive their learning environment as innovative, compared to majority students ($\chi^2(2)=13.26$, $p=0.001$). A similar pattern was found for socio-economic status ($\chi^2(4)=10.16$, $p=0.038$). As shown figure 1c, low SES students were more likely to perceive the actual learning environment as traditional and less likely to perceive it as innovative compared to middle and high SES.

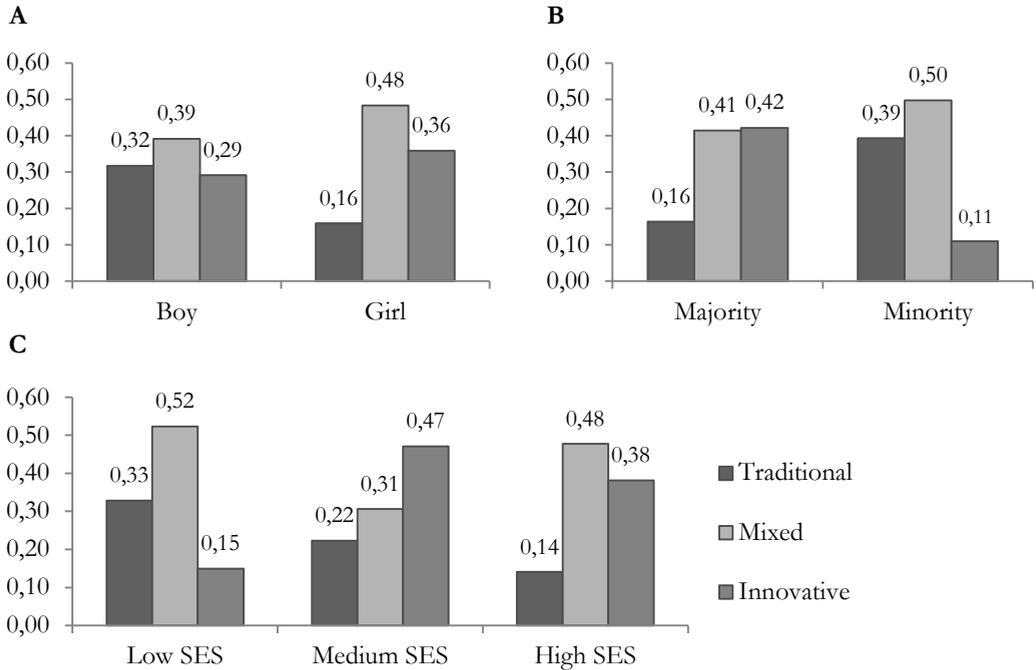


Figure 1. Student perceptions of the actual learning environment by gender (a), ethnic background (b), and socio-economic status (c).

STUDENTS' LEARNING PREFERENCES AND RELATION WITH STUDENTS' GENDER, ETHNICITY, AND SOCIO-ECONOMIC BACKGROUND

After being presented with the vignettes and indicating their perceptions of their learning environment, students were also asked about the type of learning environment they would prefer. In total 153 responses were coded. Several students found it difficult to express a preference and therefore 27 responses could not be coded. In general, students' responses did not demonstrate a clear preference for traditional ($N=45$), mixed ($N=56$) or innovative learning ($N=52$). Further examination of the interview responses revealed that especially those students that were familiar with different approaches were able to express what they preferred most. One student for example had transferred from a more

traditional to a more innovative school. She preferred the innovative learning environment at her new school, although she found it harder to keep up.

“I came here in grade four. Before, we went along with the teacher, got a lot of instruction and videos. Here, that’s less, you have to work more independently.”

Question: *“What do you prefer?”*

“I prefer this, I can more easily focus my attention. When I have to listen to someone for a period of time, it becomes boring. . . . But I find it hard to work really fast, it’s difficult to finish everything in time.” (School A, girl, Dutch, high SES)

At another school, school C, teaching methods were more innovative in the previous year, especially with regard to self-directed learning, but that school had changed to a more traditional approach. Some students in the class preferred that they were allowed to plan their work themselves, while others saw more merit in the traditional approach.

“Last year, we got our own planner. There were a couple of different subjects you had to do, and they had to be finished at the end of the week. But now, all of us work together on one subject. . . . And some students just said they were done. Even when they were not finished, they got a mark.”

Question: *“Do you think that’s the reason you’re not doing that anymore?”*

“I don’t know, but what we do now, is for example, you get a language or math task. And you can see, how you are doing, whether your level is good. When you’ve got an hour, and you just finished one calculation, then you know you’re not doing too well. . . . I like what we are doing now better, because last year, we had so much time with everything, the whole day, than some tasks were just finished quickly. . . . Now I just know how much time I have and how much I have to do, and when I’m done really late, I know I find it hard. . . . Last year, then we were working on all different subjects, history and everything. And when I was fast in mathematics, I went to work on something else directly. But not now, now when I finish with math, I can browse to the next chapter in the book or read through the book some more.”
(School C, girl, ethnic minority student, SES unknown)

Also for student preferences, it was not possible to examine group differences for each aspect of innovativeness separately. First, gender differences in learning preferences were examined. Figure 2a displays the proportion of responses coded as traditional, mixed, or innovative, separately for boys and girls. Both boys and girls expressed preferences ranging from traditional to innovative. Boys more often expressed a preference for traditional learning than girls, whereas girls more often expressed for innovative learning, but these differences were not found to be significant ($\chi^2(2)=3.25, p=0.197$). However, the direction of these small differences correspond with previous research on learning styles (i.e., Johnson & Engelhard, 1992; Philbin, et al., 1995).

In line with their perceptions of the actual learning environment, ethnic minority students were more likely to prefer traditional learning and less likely to prefer innovative learning in comparison to majority students ($\chi^2(2)=10.59, p=0.005$). This is displayed in figure 2b. Again, a similar pattern was found for socio-economic status (see figure 2c). Low SES students preferred more traditional education, while middle and high SES students were more likely to express preferences for innovative education ($\chi^2(2)=10.59, p=0.032$).

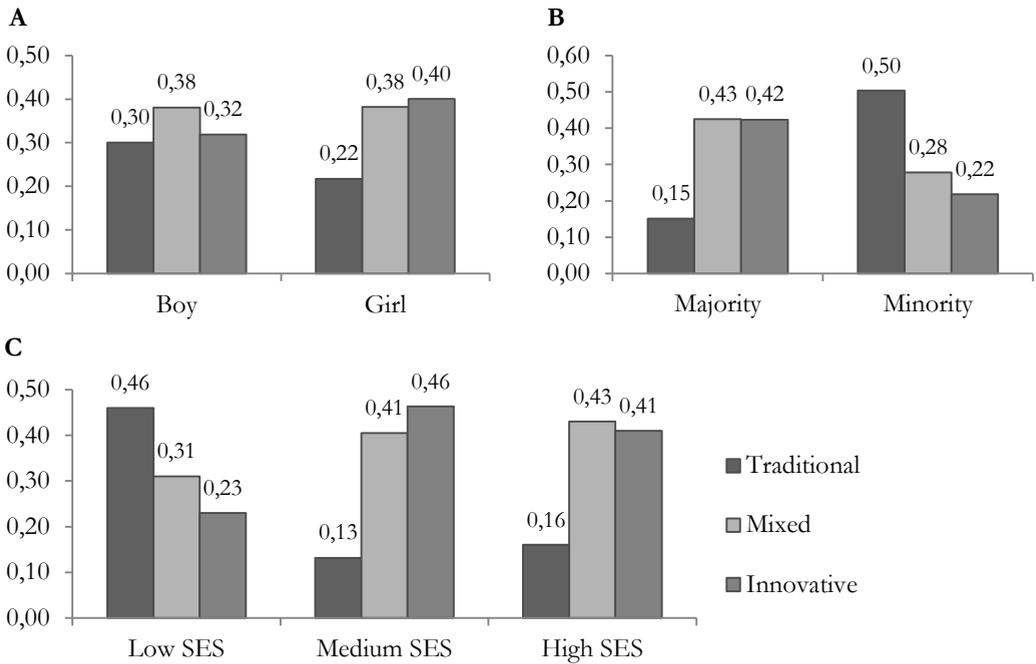


Figure 2. *Students' learning preferences by gender (a), ethnic background (b), and socio-economic status (c).*

DISCREPANCIES BETWEEN STUDENTS' LEARNING PREFERENCES AND RELATION WITH STUDENTS' GENDER, ETHNICITY, AND SOCIO-ECONOMIC BACKGROUND

Based on the perceptions and preferences that students had expressed, discrepancy scores were derived. In the following part, it was explored whether the size of the discrepancies differed by aspect of innovativeness, and it was examined to what extent discrepancies related to gender, ethnicity, and socio-economic background.

Three categories of discrepancies were derived: 1) Discrepancies were considered large when students preferred traditional education but perceived their learning environment as innovative or vice versa; 2) Discrepancies were considered small when students preferred traditional or innovative education

but perceived their learning environment as mixed or vice versa; and 3) No discrepancy was when the preferred learning environment corresponded with the perceived learning environment. Figure 3 displays the proportions of large, small and no discrepancies, separately for each aspect of IL.

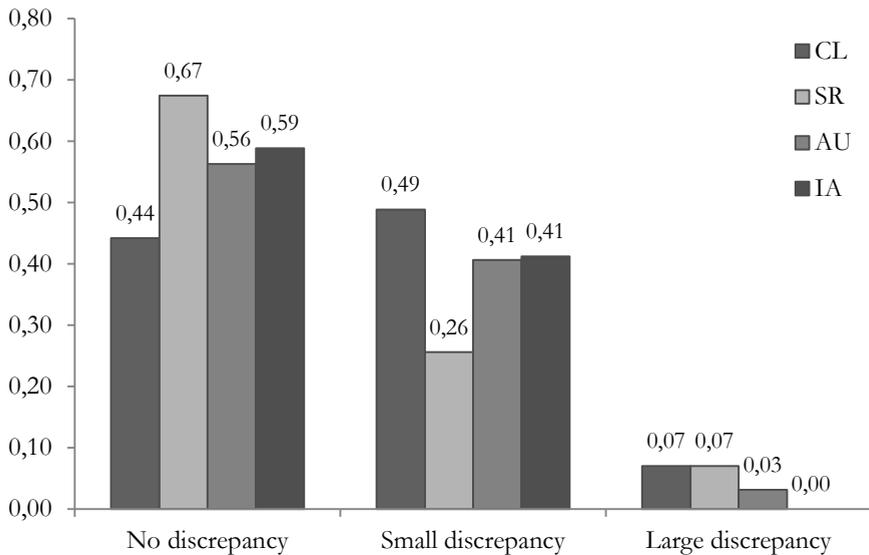


Figure 3. *Proportions of large, small and no discrepancies, separately for each aspect of IL*

As shown in figure 3, for collaborative learning, small discrepancies were most frequently found, these especially included students who would prefer less collaborative than they perceived in their learning environment. For the other aspects of IL, it was most frequently found that students' perceptions corresponded with their preferences. When discrepancies were found, they were mostly small, and found in both possible directions. Large discrepancies, indicating that students perceived their learning environment as innovative and preferred traditional learning or vice versa, were very rare for all four aspects. Thus on average, there were no large discrepancies between students' perceived

and preferred learning environment, this could suggest that students prefer how they are being taught already. The learning environment students are accustomed to – being traditional or innovative – feels comfortable to them and it may be hard to imagine anything different.

Question: “*Why [wouldn’t you like to have more responsibility]?*”

“I don’t know, it is just as it is . . . don’t really know.” (School G, boy, Dutch, low SES)

The lack of large discrepancies between students’ perceived and preferred learning environment could also indicate that teachers adapt their practices to students’ preferences. As students’ preferences were found to differ by background characteristics, this would imply that teachers’ instructional strategies differ for different student populations.

Finally, to examine whether the learning environment aligns better with their learning preferences for some groups of students, it was also examined whether the size of the average discrepancy for each student related to their gender, ethnicity, socio-economic background. The size of the discrepancies was not related to students’ gender ($t(43)=-1.035$, $p=.307$), ethnicity ($t(43)=0.188$, $p=.852$), or socio-economic background ($F(2,35)=.114$, $p=.839$). Hence, the alignment between students’ learning preferences and their perceived learning environment was comparable across groups. For different groups of students, the learning environment as they perceived it, seemed to be congruent with their learning preferences.

DISCUSSION

The aim of the present study was to examine whether students’ perceptions of their actual learning environment, their learning preferences, and the alignment between their perceptions and preferences with regard to IL varied by students’ gender, ethnicity, and socio-economic background. Low SES and ethnic

minority students, were more likely to perceive aspects of their learning environment as traditional and less likely to perceive those as innovative in comparison to middle and higher SES students and ethnic majority students. This was in line with their learning preferences. Low SES and ethnic minority students also expressed higher preferences for more traditional learning, whereas middle and higher SES students and ethnic majority students expressed higher preferences for more innovative education. No gender differences were found in either perceptions or preferences. Consequently, regardless of student background characteristics, discrepancies between students' perceived and preferred learning environment were mostly absent or small, indicating that for most students, their learning environment aligned well with their learning preferences.

The differences between students from different socio-economic and ethnic background with regard to their perceptions of the learning environment suggest that either students with different background characteristics perceive the learning environment differently, or low SES and ethnic minority students are actually taught in more traditional ways. The first explanation does not seem likely given the rather substantial levels of agreement between students within the same class and with their teachers, and given the fact that the level of agreement between students in the same class did not appear to be lower in classes with a more diverse student population. Our qualitative measurement thus seemed to capture more than just individual perceptions. Moreover, according to previous literature, students from low SES and ethnic minority students are on average more accustomed to more stringent, directive ways of parenting (Hermans, 1995). In comparison to their home environment, they would more likely perceive their learning environment as innovative rather than traditional instead of the other way around.

The more traditional approach that teachers seem to use with their ethnic minority and low SES students aligns with the preferences students reported. This could suggest that these preferences are the result of how students are taught. Students may feel most comfortable in a learning environment that is familiar to them. It may be difficult to imagine a different type of learning

environment. Therefore, students may consider what they are used to – whether it is more traditional or innovative – most attractive. While this may feel comfortable, this does not necessarily represent what is most beneficial for them. However, in line with the ‘person environment fit’ perspective (Hunt, 1975; Roeser et al., 2002), previous research demonstrated that alignment between students’ preferences and their perceived learning environment is associated with higher motivation and achievement outcomes (Chang et al., 2011; Fisher & Fraser, 1983; Könings et al., 2011). A second explanation for the alignment between students’ perceptions of their learning environment and their learning preferences would thus be that teachers adapt their instructional strategies to their students’ preferences. As students’ learning preferences were found to vary by ethnicity and socio-economic background, this is in line with previous research indicating that teachers adjust their instructional methods to their perceptions of their student population (Archambault et al., 2012; Hornstra, Mansfield, Van der Veen, Peetsma, & Volman, 2012; Rubie-Davies, et al. 2012). The outcomes of the present study seem to correspond to previous research (Hornstra et al., 2012) suggesting that teachers instruct classes with more ethnic minority and low SES students in more directive and traditional ways, whereas classes with more majority and higher SES students are taught more in more innovative ways. As such teachers may try to create an optimal person-environment fit for their students. It seems that teachers are succeeding in creating alignment between students’ preferences and the learning environment they offer them for students from different backgrounds.

Previous research with older participants demonstrated gender differences in learning preferences with boys being more attracted to traditional forms of learning and girls to more innovative learning (i.e., Johnson & Engelhard, 1992; Philbin, et al., 1995). Although not statistically significant, the differences between boys and girls in the presents study, were in a similar direction and suggested that boys were more likely to prefer traditional learning over innovative learning. It may be that these gender-specific differences do occur, but are not as pronounced in younger children. Gender differences in learning preferences may develop over time.

In the present study also student and teacher perceptions of the learning environment were compared. Only few studies have actually examined agreement between student and teacher perceptions of the learning environment and those studies have found the level of agreement to range from low to moderate agreement (e.g. Ben-Chaim, & Zoller, 2001; Den Brok, Bergen, & Brekelmans, 2006; Kunter & Baumert, 2006). Other studies found that in general the level of agreement between teachers and students tends to be rather high, although teachers tend to rate the learning environment a bit higher on constructivist instruction than their students (Fraser, 1982; 2012). The results of the present study indicated that agreement between students within the same class and with their teacher varied for different aspects of innovativeness, suggesting that not all aspects of the learning environment are equally suitable to assess through either teacher or student perceptions. Nonetheless, even though agreement varied by aspect, in general, there was substantial agreement on these aspects, indicating that teachers and students have a shared understanding of the learning context.

A few limitations of the present study need to be acknowledged. SES information of almost half of the ethnic minority students was missing. In the present study, no conclusions could therefore be drawn with regard to the interplay between SES and ethnicity. Moreover, the number of participating students and teachers was relatively small and the outcomes of the present study may be specific to the Dutch educational context. Furthermore, although outcomes suggest that traditional or innovative learning may be differentially effective for student with different ethnic or socio-economic backgrounds, because of the differences in learning preferences, larger scale studies are needed to examine whether effectiveness of innovative learning indeed depends on students background characteristics.

Given these limitations, the outcomes of the present study need to be interpreted with caution. Even though considerable differences were found between students from different ethnic and socio-economic backgrounds, there were also substantial individual differences within these groups. Student background is thus an important factor to take into account, but adapting to

students' needs and preferences always needs to be based on careful analysis of individual students' needs. Only then teachers will be able to create a good 'person-environment fit' for all students and create a learning environment in which all students, regardless of their background, can prosper.