Deconstructing Engagement:

A First Generation Report on the ArtsSmarts Student Engagement Questionnaire

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About ArtsSmarts

ArtsSmarts was founded in 1998 by The J.W. McConnell Family Foundation, on the premise that engaging young people in artistic activity is critical to their evolution as creative thinkers. Since its inception, ArtsSmarts has been demonstrating the effectiveness of integrating the arts into the school curriculum as a way of making core curriculum more relevant and meaningful to students. The program invites professional artists to collaborate with classroom teachers, infusing art throughout the provincial curriculum; teaching, for example, history through drama, math through dance, and science through music.

ArtsSmarts inspires collaboration among arts, education and community agencies, and invests strategically in creative learning networks at the local, regional, provincial and national levels to build capacity for arts and education. ArtsSmarts projects capture the imagination and build the confidence of disengaged young people and create an enthusiastic atmosphere of active learning among students, teachers, and artists.

About ArtsSmarts' Researcher-in-Residence

ArtsSmarts has been awarded a Researcher-in-Residence grant from the Canadian Council on Learning (CCL), to assist ArtsSmarts in building its research capacity and developing a research agenda that will enable ArtsSmarts to make evidence-informed decisions.

ArtsSmarts has contracted Saad Chahine, a Ph.D. candidate in Developmental and Educational Psychology in the department of Human Development and Applied Psychology at the Ontario Institute for Studies in Education of the University of Toronto (OISE/UT). The focus of his research relates to concepts of validity and how interpretations are supported by qualitative and quantitative evidence.

Introduction

ArtsSmarts operates on the hypothesis that integrating arts into the curriculum and into the classroom will improve the school experience for students, resulting in greater engagement of students in school. Increased engagement produces a potential energy to stimulate learning. Engagement is defined within this report when students' self-reporting encompasses but is not limited to the following list:

- Demonstrating enthusiasm, curiosity, and interest in the learning.
- Interacting with self, teacher and learning environment in an active, emotionally connected manner.
- Persisting in the face of difficulties.
- Expending effort to get the job done well, not looking for shortcuts to simply get it done quickly.
- Making independent connections; sometimes continuing with work after the assignment is completed.
- Taking pride in one's work.

Note: From *Engaged in Learning*[1], as the basis for the design of the questionnaires.

This list, accompanied by relevant literature, helped to form the theoretical framework of the first generation of ArtsSmarts student engagement questionnaires. During the school year 2006-2007, ArtsSmarts representatives collaborated with Karen Hume[1] to design a questionnaire to measure students' engagement before and after ArtsSmarts programs. The questionnaire was administered to a large number of students who were being taught by an ArtsSmarts team comprised of an artist and a teacher.

ArtsSmarts uses an innovative approach to arts integration, by allowing the self-construction of programming in classrooms; and by acting as a facilitator in providing resources for artists and teachers teams develop programming for students in their classrooms. This programming develops a context where student learning and engagement in tasks and activities can take place. ArtsSmarts does not dictate this creative process; rather, it plays a supportive role in acting as a reference point for the teacher-artist teams to rely on. This approach not only allows for the innovation to evolve organically from the generation of the artist-teacher teams to student interaction, but also excites the creative learning process within the classroom.

The questionnaires were developed to explore the engagement model proposed by Karen Hume. Survey items were selected based on their alignment to the four components of **Content**, **Context**, **Process** and **Product**. The Content and Context components were further divided into "Relevant and Important Work" (Content), "Student Ownership" (Content), "Supportive/Collaborative" (Context) and "Risk Taking and Challenge" (Context), resulting in a six-component model.

This report is a summary of the results from this first administration of the ArtsSmarts Student Engagement Questionnaire (i.e., first generation). The overall purpose of this report is firstly to examine student engagement, and secondly to examine the quality of the questionnaire, for further refinements.
This report has three areas of focus:

1. To summarize the responses of students who completed the questionnaire.
2. To compare student engagement before and after intervention.
3. To identify strengths and weakness in the questionnaire for further revisions.

The following results of the questionnaires are broken down into thematic sections. Although the report was designed with an ArtsSmarts theory of engagement in mind, the items on the questionnaires were not separated by constructs. For readability and usability purposes the researcher has divided the

[1] Hume, K., (2006). *Engaged in Learning: The ArtsSmarts Model*. ArtsSmarts, Ottawa, Canada: http://www.artssmarts.ca/media/en/EngagedInLearningWEB.pdf

questions: firstly, by those that students would respond to in the same way, for example agree-to-disagree items were grouped together and secondly, by common themes. The common themes serve as the titles used within each summary in the following text. Further, within the report we first present the sample, followed by summaries for each questionnaire, the contrast between pre- and post- measures, and conclude with reflections and refinements for future use of the questionnaires.

The Sample

Students participated in the pre-questionnaire prior to the artist and teacher teams starting in the classroom. Students also participated in the post-questionnaire after the ArtsSmarts projects were completed. The questionnaires were taken by students on-line and students had the options to complete the questionnaires in class or at home. Students were also provided with a unique code, to allow for the matching of pre-questionnaire participants with those of the post-questionnaire. There were efforts made so that the same students who wrote the pre-questionnaire also wrote the post-questionnaire, however not all students participated after the projects were completed.

Once the surveys were completed, the data were examined for missing data, and students' responses with a great deal (more then 70%) missing data were removed from the data set. The pre-questionnaire had a total of 155 usable students' responses and the post-questionnaire had a total of 86 usable students' responses. A total of 75 students completed both pre- and post-questionnaires. Of the 155 students who wrote the pre-questionnaire, 134 were from English-speaking schools and 21 from French-speaking schools.

The following table is a breakdown of students by grade, language, and then by gender. Totals at the end of the row are the percentage in each grade out of the total sample and totals at the end of the columns are the percentage of boys/girls in the sample. For example, you may read the first row: there are a total of 14% grade three students: 8% of the total sample are grade three boys and 6% are grade three girls.

Table 1:
Summary of Sample by Grade, Language and Gender (pre-questionnaire)

Grade	Language	Boy	Girl	Total
3	*English*	8%	6%	**14%**
	French	-	-	**-**
4	*English*	8%	6%	**14%**
	French	-	-	**-**
5	*English*	6%	3%	**10%**
	French	-	-	**-**
6	*English*	9%	13%	**22%**
	French	-	-	**-**
7	*English*	-	-	**-**
	French	2%	5%	**6%**
8	*English*	-	-	**-**
	French	4%	3%	**7%**
9	*English*	1%	3%	**4%**
	French	-	-	**-**
10	*English*	1%	5%	**6%**
	French	-	-	**-**
11	*English*	4%	10%	**14%**
	French	-	-	**-**
12	*English*	0%	3%	**3%**
	French	-	-	**-**
	Total	**43%**	**57%**	**100%**

Eighty-six students wrote the post-questionnaire: 65 English (76%) and 21 French (24%). Similar to Table 1 above, the following Table 2 is a breakdown of the sample who participated in the post-questionnaire. For example we can see that 26% of the students who wrote the post-questionnaire are in grade four: 14% of the students are boys in grade four and 12% are girls in grade four.

Table 2:
Summary o f Sample by Grade, Language and Gender (post-questionnaire)

Grade	Language	Boy	Girl	Total
3	*English*	-	-	**-**
	French	-	-	**-**
4	*English*	14%	12%	**26%**
	French	-	-	**-**
5	*English*	12%	6%	**17%**
	French	-	-	**-**
6	*English*	0%	6%	**6%**
	French	-	-	**-**
7	*English*	-	-	**-**
	French	3%	8%	**12%**
8	*English*	-	-	**-**
	French	7%	6%	**13%**
9	*English*	1%	3%	**5%**
	French	-	-	**-**
10	*English*	1%	6%	**7%**
	French	-	-	**-**
11	*English*	0%	9%	**9%**
	French	-	-	**-**
12	*English*	0%	6%	**6%**
	French	-	-	**-**
	Total	**38%**	**62%**	**100%**

Based on these percentages, we can see that the sample for the pre- and post-questionnaires contained more girls than boys. There were also more English than French students, yet more of the French students wrote both the pre- and post-questionnaires. More than half of the English students who completed the pre-questionnaire did not complete the post–questionnaire. For the most part, the students were well distributed over all the 10 different grades.

Summary of Pre-Questionnaire

Before the classes started to work with an artist, the students completed the questionnaire answering questions related to: work ethics, creativity, enjoyment, favourite activities and subjects, engagement through doing things, feelings, and learning. The results of these questions are presented in this summary section.

Work Ethic, Creativity, and Enjoyment

Students were asked questions that related to their work ethic and value judgments about how to be engaged with school. The first question asked: *What do you think is the best way to get good grades?* The majority of students (91%) agreed that the best way is to work hard, 8% said the best way is to be naturally smart and 1% said the best way is to "get my teacher to like me". This may indicate that the students who participated in the pre-survey believed that to do well in school they had to work hard. Similarly, the majority of students (91%) agreed that they do their homework almost all the time, and also the majority of students (94%) believed they do well in school. These results suggest that the students enrolled in the ArtsSmarts classrooms, before working with the artist, had the perception that they do well in school and do their homework regularly.

These students also believed that they are creative (95% agreed, 4% disagreed and 1% were missing), and they looked forward to doing arts in school (87% agreed, 11% disagreed and 2% were missing). Yet only approximately ¾ of the students believed that they are artists, so there are approximately 20% of students who did not think they are artists but believed they are creative.

We can speculate that the students have a positive attitude towards arts and school based on the responses. This positive attitude was self-identified by students who believed that they will do better this year than last year (88% agreed, 11% disagreed, and 1% were missing). Further, only 67% would rather choose class work that they can do rather then work that they have not done before (36% disagreed and 1% were missing). When looking at these responses, we may describe this group of students as typical of a regular classroom, where they like seeing something they have done before at the beginning of the year and tend to have a positive outlook on how they will do in the current year compared to the previous year.

Three items asked about students' enjoyment of school, in relation to learning, their friends and the activities in which they participate. Most students enjoyed school because of their friends (86% agreed and 14% disagreed). The majority of students also enjoyed school because they enjoyed learning (70% agreed, 29% disagreed and 1% were missing), as well as enjoying the activities/clubs they participate in (70% agreed and 30% disagreed). For the most part, approximately ¾ of the students who completed the survey enjoyed school, for the various reasons indicated.

Favourite Activities and Subjects

Students were asked to select the different school activities they participate in after school or on weekends. These counts were not independent, i.e., one student may participate in more than one activity, e.g. art, music and dance. For this reason, the results are presented as a count of which activity students self-identified they engaged in after school and on weekends.

Students responses varied: Music (n=55) and Art (n=52) had the highest participation rates, followed by Dance (n=39) and Creative Writing (n=36). The after school or weekend activity students participated in least was Filmmaking/Video Production (n=19).

Ranking Activities

Students were then asked to rank activities from 1 to 8, where 1 was their most favourite thing to do and 8 was their least favourite. The results are presented in Table 3 below, that describes two aspects of ranking. The first is the ranking within each activity, and the second is the comparison rankings across the eight activities. For example, 23% of students stated that to play or listen to music is number one for

them, it was ranked the 3rd activity across the other activities, with 17% students in favor of it being 3rd. For the most part, the activities are ordered from highest to lowest, except for "*read books"* and *"think about things"*. Most students (17%) selected "*read books"* as their 4th favourite activity, at the same time 18% of students selected "*learn how things work"* as their 4th favourite activity; as a result, "*read books"* is the only activity that was not most frequent in any of the eight positions. "*Think about things"* also ranked as the 6th favourite activity and the 8th favourite activity. While this activity was frequently selected amongst the other activities, it was also the lowest ranked.

Table 3
Percentages of activity ranking

	Be outdoors	*Learn how things work*	*Make new friends*	*Play or listen to music*	*Read books*	*Solve mazes or puzzles*	*Think about things*	*Work with my hands*
1	**26%**	3%	18%	23%	8%	3%	5%	10%
2	10%	10%	**25%**	17%	10%	5%	8%	7%
3	14%	10%	16%	**17%**	12%	10%	7%	6%
4	14%	**18%**	6%	12%	17%	11%	8%	8%
5	5%	16%	8%	6%	14%	**21%**	7%	15%
6	8%	11%	7%	8%	9%	14%	**19%**	14%
7	5%	15%	9%	6%	12%	13%	12%	**16%**
8	13%	7%	4%	3%	12%	17%	**21%**	13%
missing	*5%*	*9%*	*7%*	*8%*	*6%*	*7%*	*14%*	*11%*

The results suggest that children like being outdoors most, then enjoy playing music and making new friends, followed by learning how things work. The other activities fell into the lower parts of the ranking. What we may discover is that when students participate in these activities in class, engagement may increase. This can possibly be a future research question.

Ranking Subjects

Students were also asked to rank subjects from 1 to 10, where 1 was their most favourite and 10 was their least favourite. The results are presented in Table 4 below, bolded numbers representing where the majority of students responded for each subject. While the majority of students selected ranked Art, Music and Physical Education as their top subjects, Art had the highest ranking across the subjects; Drama was the 2nd and 3rd favourite subject and tied with Physical Education as the 3rd favourite subject. Music was the 4th favourite, and Dance did not exceed the other subjects in any of the positions.

Table 4
Percentages, ranking of subjects

	Art	*Dance*	*Drama*	*History/Geo/ Soc Science*	*Language Arts*	*Math*	*Music*	*Other Language*	*PE*	*Science*
1	**23%**	16%	6%	2%	3%	8%	15%	1%	18%	4%
2	15%	11%	**15%**	5%	6%	9%	13%	5%	8%	6%
3	12%	7%	**14%**	10%	10%	4%	6%	5%	**14%**	10%
4	8%	5%	12%	10%	8%	8%	**14%**	8%	6%	11%
5	10%	5%	6%	11%	**18%**	10%	8%	11%	4%	10%
6	4%	7%	6%	11%	**17%**	10%	8%	11%	8%	11%
7	5%	7%	7%	**14%**	8%	6%	10%	12%	9%	12%
8	8%	6%	10%	12%	7%	7%	5%	12%	8%	**12%**
9	5%	**13%**	10%	9%	10%	10%	3%	12%	7%	9%
10	5%	17%	5%	10%	3%	**17%**	6%	13%	6%	10%
missing	*5%*	*6%*	*10%*	*8%*	*13%*	*10%*	*12%*	*11%*	*10%*	*5%*

It is not surprising that Mathematics ranked last. Mathematics is often a subject students struggle with, and as a result often gets a low ranking. Dance is interesting as there is almost an equal number of students who rank Dance first on their list, and others who rank it last on their list. This raises a potential complication in understanding of engagement in relation to arts integration. It may be necessary to look at engagement through the different forms of the arts rather than grouping them together, as some may be more engaged in a dance integrated class than others.

Engaged by: Doing, Feeling and Learning

The last section of the survey, based on frequency questions, can also be called the "how often questions". From a list of four frequencies (all the time, most of the time, a few times, never) students selected one to reflect their frequency of activity. In Table 5 below, the items are presented on the left and the frequency of occurrence categories are on the top.

Table 5
Percentages of Frequency

	all the time	most of the time	a few times	never	*missing*
Contribute to class discussions	23%	**44%**	32%	1%	*0%*
Do hands-on work,	23%	32%	**38%**	5%	*3%*
Do work that is interesting to you	36%	**39%**	21%	1%	*3%*
Do work that matters to you	36%	**41%**	15%	6%	*2%*
Do work that relates to your experiences at home or in your community	14%	**41%**	31%	14%	*1%*
Feel challenged to do your best work	34%	**34%**	24%	8%	*1%*
Feel curious and wanting to learn things	29%	**39%**	22%	7%	*3%*
Feel encouraged by your classmates	23%	**35%**	26%	14%	*1%*
Feel encouraged by your teacher	**41%**	34%	17%	6%	*2%*
Feel like your doing important work	26%	**43%**	21%	10%	*1%*
Feel Like our Learning New Things	34%	**41%**	19%	3%	*3%*
Get help from teacher	20%	32%	**43%**	5%	*1%*
Have Choice in your work	21%	35%	**37%**	6%	*1%*
Have class discussion	27%	**40%**	28%	4%	*1%*
Have fun	**46%**	26%	22%	5%	*1%*
Make something to show what you've learned	24%	**39%**	26%	8%	*3%*
See connection between subjects	21%	**41%**	32%	5%	*1%*
See how things you learned could help you in other subjects	25%	**45%**	26%	3%	*1%*
Solve problems to make you work better	32%	**42%**	21%	4%	*1%*
Work in the way I learn best	37%	**46%**	14%	1%	*3%*
Work with other students in class	25%	**37%**	33%	4%	*1%*
Work with other students outside of class	**28%**	27%	27%	18%	*0%*

The majority of student felt encouraged by teachers, had fun and worked with students outside of class *all the time.* On the opposite side, the majority of students did hands on work, got help from the teacher, and had choice in their work only *a few times*. The majority of responses for the other items was in the in the *most of the time* category, and there was not a majority of responses in the *never* category for any item. Another intriguing conflict is that the majority of students believed that a teacher is encouraging *all the time* but not helpful *most of the time*. This raises another future research question: What do students perceive to be encouraging and how do they perceive this as helpful?

Summary of Post-Questionnaire

After the artists were in the class with the teacher, the students were asked to complete a post-questionnaire. Within the post-questionnaire, some of the questions were the same as the pre-questionnaire, and others were different. Both are presented in the summary section, and only the ones that are the same are in the contrast section of this report. The same sequence of reporting of the results is used as in the summary of the pre-questionnaire.

Enjoyment, Pride, and Learning

Similar to the pre-questionnaire responses, most students enjoyed going to school because their friends were there (85% agreed, 11% disagreed, and 4% were missing), followed by because of the activities/clubs they participated in (72% agreed, 25% disagreed, and 3% were missing); lastly the majority of students liked going to school because they enjoyed learning (64% agreed, 31% disagreed, and 5% were missing).

The majority of students (78% agreed, 18% disagreed, and 4% were missing) were proud of the work they did in ArtsSmarts; most of the students (81% agreed, 13% disagreed, and 6% were missing) said that they could do even the hardest work on the project if they tried; and over 85% believed that they learned a lot from the artist. The majority of students (77% agreed, 19% disagreed, and 4% were missing) also believed they learned a lot from the teacher. It appears from these questions that most of the students felt that ArtsSmarts projects were very beneficial.

The majority of students (79% agreed, 16% disagreed, and 4% were missing) involved in the ArtsSmarts projects also believed that what they learned in the project could be used in other subjects. Almost 80% said that they would like to do an ArtsSmarts activity again, and most of them (68% agreed, 27% disagreed, and 5% were missing) said they worked harder on this project than any other project before. So even though it was very hard work, they enjoyed it and felt what they learned could be carried over to other subjects.

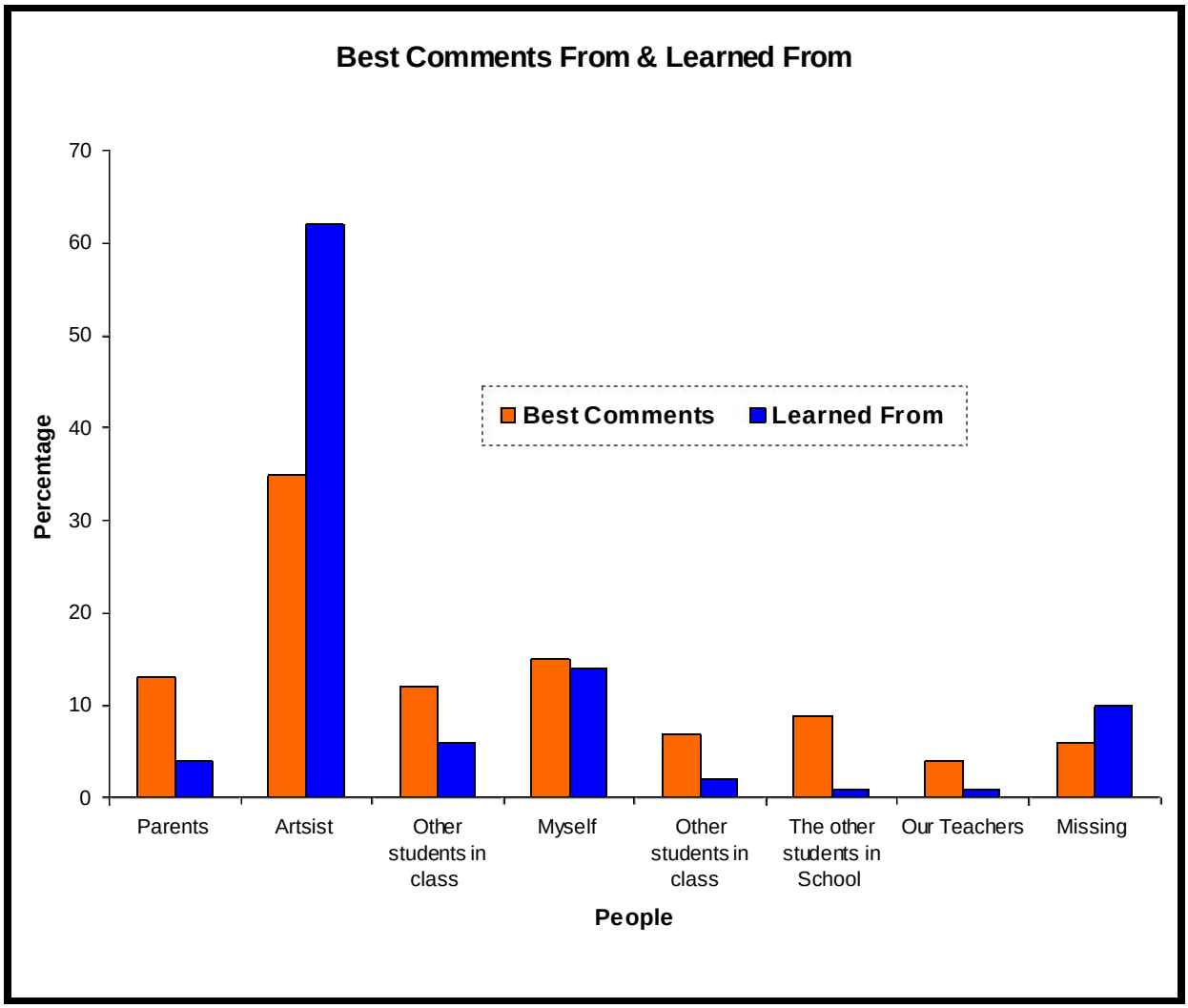
Although most said this was the hardest work that they had done, most (78% agreed, 19% disagreed, and 3% were missing) said that their teacher helped them do challenging work; an almost equal percentage (79% agreed, 17% disagreed, and 4% were missing) said that the artists helped them do challenging work. Connected with these responses, more than 80% of students believed that they were thinking more than just doing easy work. Not only were students challenged, the challenge helped them think about what they were doing.

Sharing and Comments

The sharing of work is important in the ArtsSmarts projects; not only does it give children a sense of pride but it may also relay the depth of understanding children have as expressed through art. At the time of completing the post-questionnaire, 66% of students had publicly shared their work, 22% had not, 7% did not but were planning to, and 5% of the responses were missing. Interestingly, those who did share their work did not do it because it was their choice; only 44% of students showed their work to people of their own choosing, 41% did not show their work to people of their own choosing, 8% had not yet done so but were planning to, and 7% of responses were missing.

Students were also asked who gave the best comments about the work they did with ArtsSmarts, and who they learned the most from. In both cases, they identified the artists most often. We then compared the responses of students in these two questions with Figure 1 below.

Figure 1. Who gave students the best comments and whom did they learn most from



The blue bars represent the percentage of students who said they learned most from and the orange bars indicate those who gave them the best comments. The students felt that they shared the most and learned the most from the artists. When we compare learning and comments, parents gave students better comments, but students did not learn from them as much. This pattern was the same but varied in degree with other students in class and in school, their teachers, and themselves. These two questions reflect the type of feedback students are given, which is often a sign of commenting and learning. In another study it would be interesting to capture the type of feedback artists give to students in relation to the teachers, parents and other students.

Engaged by: Doing, Feeling and Learning

This section of the questionnaire was the first to be completed in the post-questionnaire. It is presented in the same order as the pre-questionnaire in this report. Some of the questions were worded slightly differently. The community question asked in the pre-questionnaire was not asked in the post-questionnaire, and questions relating to the artists and the ArtsSmarts projects were not asked in the pre-questionnaire but are asked in the post-questionnaire. Table 6 below illustrates how students responded.

Table 6
Percentages of Frequency

	all the time	most of the time	a few times	never	*missing*
Contribute to class discussions	26%	**33%**	16%	3%	22%
Do hands-on work	27%	**42%**	28%	2%	1%
Do work that is interesting to you	**41%**	38%	15%	5%	1%
Do work that matters to you	31%	**43%**	17%	7%	1%
Feel challenged to do your best work	20%	**41%**	23%	15%	1%
Feel curious and wanting to learn things	31%	**37%**	21%	8%	2%
Feel encouraged by the artist	**38%**	36%	14%	9%	2%
Feel encouraged by your classmates	**34%**	33%	19%	13%	2%
Feel encouraged by your teacher	34%	**41%**	19%	6%	1%
Feel like your doing important work	**38%**	29%	21%	9%	2%
Feel like your learning new things	**41%**	37%	16%	3%	2%
Find it easier to learn your school work because of the art you did	24%	**29%**	26%	19%	2%
Get Help from the teacher	24%	27%	**36%**	10%	2%
Have Choice in your work	**33%**	31%	28%	7%	1%
Have class discussion	33%	**43%**	16%	3%	5%
Have fun	**48%**	28%	20%	2%	2%
Make something to show what you've learned	30%	**33%**	24%	9%	3%
See connections between different subjects	**36%**	33%	20%	8%	3%
See how things you learned could help you in other subject	28%	**36%**	23%	9%	3%
Solve problems to make your work better	29%	**47%**	16%	6%	2%
Work in the way you learn best	40%	**42%**	10%	6%	2%
Work with other students outside of class	23%	24%	**34%**	15%	3%
Work with students you don't normally work with	28%	23%	**35%**	12%	2%

The only attributes that most of the students claimed only happened *a few times* were *get[ting] help from the teacher*, *work[ing] with other students outside of class, and work[ing] with students [they] don't normally work with*. All the other aspects measured in this questionnaire happened *all the time* or *most of the time*.

Contrast From Pre- to Post-Questionnaire

Contrasting the pre-questionnaire to the post-questionnaire was performed by analyzing the data from matched individual students who completed the pre-questionnaire and the post-questionnaire. The contrasts were made on the frequency of "how often" questions that are in the combined resulted in the following Table 7.

Table 7
List of questions used in the contrast analysis

Do Hands-on work
Do work that's interesting to you
Do work that matters to you
Feel challenged to do your best
Feel curious and wanting to learn
Feel encouraged by you class
Feel encouraged by your teacher
Feel like your doing important work
Feel like your learning new things
Get help from your teacher
Have choices in your work
Have class discussions
Have fun
Make something to show what you've learned
See connections between different subjects
See how things you learned could help you in other subjects
Solve problems to make your work better
Work in the way you learn best
Work with other students in class
Work with other students outside of class

In total, 75 students completed both the pre-and post-questionnaire. Missing data was eliminated in a pair-wise comparison, so for each item the most paired responses were conserved. We performed a paired-sample t-test on all of the questions to see if there is a significant difference in students' responses. Three questions were found to have statistically significant differences after meeting assumptions. More students indicated that they did hands-on work more frequently after the ArtsSmarts project (M=1.97, SD= .822) than before the project (M= 2.21, SD=0.89); the difference was statistically significant $t(71)=2.36$, p = .021. Students also indicated having more frequent encouragement by their class after the ArtsSmarts project (M=1.99, SD=.993) than before the ArtsSmarts project (M=2.41, SD=1.039), and the difference is significant $t(72)=3.74$, p =.000. Lastly, students indicated that they made connections between different subjects more frequently after the ArtsSmarts project (M=1.96, SD=.926) than before the ArtsSmarts Project (M=2.21, SD=.821), and the difference is statistically significant $t(71)=2.399$, p=.019.

The following Table 8 visually illustrates the distribution of change from pre-questionnaire to post-questionnaire. The density of the colours in the chart represents the amount of students in each cell; the darker the colour the more students fall within that cell. To develop this table, students' responses on the post-questionnaire were subtracted from the pre-questionnaire; if the result was "0" then there was no change (pre=post). If the result was "+1" then students report that they are performing this task more frequently, for example 15 students report that they do hands on work "more frequent[ly]". Conversely, if the result was "-1", then students were doing this task "less frequent[ly]"; for example, 20 students feel challenged to do their best "less frequent[ly]." The other categories, "much more frequent" and "a lot more frequent," are equal to "+2" and "+3" respectively, and represent more frequent behaviour/feeling/learning. Similarly, "Much less frequent" and "a lot less frequent" are equal to "-2" and "-3" respectively, and represent less frequent behaviour/feeling/learning.

Table 8
Visual illustration of change distribution from pre-questionnaire to post-questionnaire

	A lot less frequent	Much Less frequent	Less frequent	Pre = Post	More frequent	Much more frequent	A lot more frequent
*Do hands-on work**	0	0	12	38	15	7	0
Do work that's interesting to you	1	3	13	32	19	6	0
Do work that matters to you	1	6	13	34	14	3	2
Feel challenged to do your best	3	7	20	24	14	4	2
Feel curious and wanting to learn	0	4	17	27	16	5	1
*Feel encouraged by your class**	0	1	8	35	19	8	2
Feel encouraged by your teacher	0	2	16	30	22	4	0
Feel like you're doing important work	2	4	8	34	18	5	2
Feel like your learning New things	1	2	13	31	20	4	1
Get help from your teacher	0	3	16	36	16	3	0
Have choices in your work	1	3	11	37	17	4	2
Have class discussions	0	2	8	41	14	6	0
Have fun	0	4	11	37	12	8	2
Make something to show whatyou've learned	1	5	8	39	17	2	0
*See connections between different subjects **	0	1	9	37	21	3	1
See how things you learned could help you in other subjects	0	2	18	37	14	2	0
Solve problems to makeyour work better	0	3	10	43	10	5	1
Work in the way you learn best	0	3	10	35	21	3	0
Work with other students in class	2	6	21	21	19	3	1
Work with other students outside of class	3	8	7	35	16	4	1

Note: * indicates a statically significant change at $p<.05$ level

Visually looking at the data will help understand how students' reporting changed from the pre-questionnaire to the post-questionnaire. For example, *Feeling challenged to do your best* is not statistically significantly different from the pre-questionnaire to the post-questionnaire, but it only had very few students who stayed the same, suggesting there was a great deal of shifting in self-reporting. Examining this change in distribution, there are more additional shifts that may not be statically significant: *Feel curious and wanting to learn, Feel encouraged by your teacher, See connections between other subjects, Work in the way you learn best* and *Work with other students in class* all

changed; some shifting more dramatically, and others less dramatically. It is possible that in a larger sample size these shifts may provide results that are statistically significant.

The last analysis to contrast the pre-post paired group is a non-parametric test called the "Wilcoxon Signed Rank Test". Similar to the visual illustration of distribution above, the test compares the rank change, evaluating the extent to which changes are significantly different from each other. The test highlighted the same questions as the paired sample t-test, and found that *Do hands-on work* (z=2.36, p=.018), *Encouragement by classmates* (z=3.44, p=.001) and *Seeing connections to other subjects* (z=2.51, p=.012), was more frequent in the post-questionnaire then the pre-questionnaire. This test confirms the results of the paired sample t-test.

We can be confident in stating that students believe that they do hands on work, are encouraged by their classmates and see connections to other subjects, more often after the ArtsSmarts projects. It is also important to consider aspects which we could not control and may not know, such as change in class environment when working with the artist, and the quality of feedback provided by the artists and the teacher during the project. There still remains a great deal of information that may help in understanding the change. These must be explored through various means, questionnaire, interviews, observations etc., before we can conclude that the ArtsSmarts projects cause a change in student engagement.

Reflections and Refinements

General Reflections

The summary of results of the pre- and post-questionnaires provides hints or clues about aspects that need further exploration to understand how ArtsSmarts projects relate to student engagement. The first of these relates to teacher help and artist help in relation to learning and encouragement.

Student involved in the ArtsSmarts projects have identified, though not explicitly, that the quality and type of feedback given relates to how much they enjoy the ArtsSmarts projects, which also relates to how much they have learned, and essentially their engagement in the ArtsSmarts projects. We would suggest that the exploration of feedback given to students in ArtsSmarts projects, throughout the project and at the end, is a promising area of study and may help unlock the understand of why ArtsSmarts "works" in many cases and does not "work" in other cases. We need to ask the following questions to help understand this relationship:

- *What are the various forms of feedback that are provided by teachers?*
- *What are the various forms of feedback that are provided by the artists?*
- *What is the relationship between these artists and teachers' feedback strategies?*
- *How can we relate these feedback strategies to children's learning?*
- *How can we relate these feedback strategies to children's encouragement?*
- *To what extent does feedback play a role in the success of children's engagement during and after the ArtsSmarts projects?*

The results also suggest that the type of arts being integrated may have a role to play in children's self-identification of engagement. Dance stands out as the form of arts on which children were almost equally divided, between those who dislike Dance and those who really enjoy Dance. We need to ask questions like the following to help understand how students engage in the ArtsSmarts projects:

- *To what extent does the form of art (dance, visual, performance, etc.) play a role in the enjoyment of students within class?*
- *What are the proportions of different ArtsSmarts projects that have been carried out and are currently underway?*
- *How does the form of art relate to the success of an ArtsSmarts project?*

Some of these research questions may be answerable given the data that ArtsSmarts already has as an organization. None of the questions have examined the role of gender or age; yet if this is a focus, the results can be aggregated/disaggregated to explore the relationship between gender and student engagement.

Change Reflections

Understanding the change in student engagement is critical to understanding the success of the ArtsSmarts projects. This was examined in two ways in the analyses. The first was looking more generally at the average of all those who wrote the pre-questionnaire in relation to those who wrote the post-questionnaire. The results from this analysis were not as useful as the results of the second contrast. The second contrast examined only those students who had written the pre-questionnaire and the post-questionnaire. The results suggest that there are changes in students doing hands-on work, being encouraged by classmates, and linking what they have learned to other subjects. The following may be research questions that are important to understand this change in students' perceptions in relation to these three items:

Doing -- Hands on:

- *What are the various different activities that promote hands-on work in the ArtsSmarts projects?*
- *How does doing hands-on work relate to student engagement?*
- *To what extent may hands-on work be related to student engagement in the ArtsSmarts projects?*

Feeling -- Encouragement by classmates:

- *What are the various activities carried out in class that promote peer encouragement in the classroom?*
- *To what extent is peer encouragement related to feedback and learning from peers?*
- *How does peer encouragement relate to student engagement during the ArtsSmarts projects?*

Learning -- Connection to different subjects:

- *To what extent may connecting to different subjects relate to promotion of student learning during ArtsSmarts projects?*
- *In which ways are students making the connections to other subjects?*
- *How does making connections to other subjects relate to student engagement during and after ArtsSmarts projects?*
- *What are the various methods used in the classroom to promote the connections to different subjects through the ArtsSmarts projects?*

Understanding how these three aspects of student engagement change is pivotal in our understanding of the effects of the ArtsSmarts projects. Also this is a piece of evidence that has not been fully explored in our understanding of student engagement as a field.

Refinements

The refinements discussed in this section relate mostly to instrument refinement and the measurement qualities of the questionnaire. However, one of the aspects that may help in further refining the questionnaire is a larger sample of students taking the survey. We encourage the application of the questionnaire to as many of the ArtsSmarts projects as possible.

The questionnaire was developed based on other student engagement questionnaires. There were various iterations to develop two sets of questionnaires (pre-and post-). Developing a questionnaire in this method means that the items have not been theoretically combined to form constructs that can help us understand and define the dimensions of student engagement.

For example, Chapman[2] explored the alternative approaches to assessing student engagement. Through her research she elucidates three kinds/types of student engagement: 1. cognitive criteria, 2. behavioral criteria, and 3. affective criteria. Essentially, engagement can be examined in three ways about thinking, participation, and feeling. Students may be engaged more in learning, through participating and feeling better/good. With a theoretical basis like this, it is possible to construct scales to capture the different dimensions of engagement and come to a deeper and more nuanced understanding of relationships between constructs.

An exploratory factor analysis identified five factors or dimensions that make up the items used for in the contrast analysis. However, since the questionnaires were not developed with this theoretical framework in mind, the factor analysis is not interpretable. We would suggest categorizing these items similar to the way the survey was developed, i.e. teachers, artists and research sit together and look through the items and try to fit them into either engagement that relates to learning, behavior or the affective domain. This process will help ground the questionnaire in a larger theoretical framework of student engagement. Doing this type of survey development will make the interpretations from the results more valid and reliable. Given this is the first attempt and that the instrument was developed without pre-test and examining the qualities, we are very encouraged to continue using this questionnaire to capture student engagement through their self-identification.

[2] Chapman, Elaine (2003). Alternative approaches to assessing student engagement rates. *Practical Assessment, Research & Evaluation*, 8(13). Retrieved August 12, 2007 from http://PAREonline.net/getvn.asp?v=8&n=13 .

Appendices

Student Survey – Before Working with an Artist

1. Introduction

The purpose of this survey is to find out how you feel about school and how you like to learn. Please select the answers you feel are most right for you. Your answers will be kept private - no one from your school or home will see what you write.

2. Demographics

1. Unique ID (assigned by your teacher)

2. I am a
o boy o girl

3. I am in Grade
o 3 o 4 o 5 o 6 o 7 o 8 o 9 o 10 o 11 o 12

3. Survey Questions

For each question below, please select the answer you feel is most right for you. Your answers will be kept private - no one from your school or home will see what you write.

4. What do you think is the best way to get good grades? (choose one)
- o Work hard
- o Be lucky
- o Be naturally smart
- o Get my teacher to like me

5. How strongly do you agree or disagree with the following:

	Strongly agree	Agree	Disagree	Strongly disagree
I do my homework almost all the time.				
I do well in school.				
I like going to school because I enjoy learning.				
I like going to school because my friends are there.				
I like going to school because of the activities / clubs I participate in.				
I like to choose classwork I know I can do, rather than work I haven't done before.				
I look forward to doing the arts at school.				
I think I am an artist.				
I think I am creative.				
I think I am doing better at school this year than I did last year.				

6. Which of the following do you participate in after school or on weekends? (Select all that apply)

o Art o Creative Writing o Dance
o Drama o Filmmaking/Video Production o Music

7. Rank the following activities from 1 to 8, where 1 is your most favourite thing to do and 8 is your least favourite:

	1	2	3	4	5	6	7	8
Be outdoors.								
Learn how things work.								
Make new friends.								
Play or listen to music.								
Read books.								
Solve mazes or puzzles.								
Think about things.								
Work with my hands.								

8. Rank the following subjects from 1 to 10, where 1 is your most favourite and 10 is your least favourite:

	1	2	3	4	5	6	7	8	9	10
Art										
Dance										
Drama										
History/ Geography/ Social Studies										
Language Arts										
Mathematics										
Music										
Other Language										
Physical Education										
Science										

9. In your regular class, how often do you:

	All the time	Most of the time	A few times	Never
Contribute to class discussions				
Do hands-on work, e.g. make things with your hands				
Do work that is interesting to you				
Do work that matters to you				
Do work that relates to your experiences at home or in your community				
Feel challenged to do your best work				
Feel curious and wanting to learn things				
Feel encouraged by your classmates				
Feel encouraged by your teacher				
Feel like you're doing important work				
Feel like you're learning new things				
Get help from the teacher				
Have choices in your work				
Have class discussions				
Have fun				
Make something to show what you've learned, e.g. show your learning in a way that isn't a test				
See connections between different subjects				
See how things you learned could help you in other subjects				
Solve problems to make your work better				
Work in the way you learn best				
Work with other students in class				
Work with other students outside of class				

Student Survey – After Working with an Artist

1. Introduction

The purpose of this survey is to find out about your experience of using art to learn. Please select the answers you feel are most right for you. Your answers will be kept private - no one from your school or home will see what you write.

2. Demographics

1. Unique ID (assigned by your teacher)

2. I am a
o boy o girl

3. I am in Grade
o 3 o 4 o 5 o 6 o 7 o 8 o 9 o 10 o 11 o 12

3. Survey Questions

For each question below, please select the answer you feel is most right for you. Your answers will be kept private - no one from your school or home will see what you write.

4. In the work you did with your teacher and the artist, how often did you:

Contribute to class discussions	All of the time	Most of the time	A few times	Never
Do hands-on work (e.g. make something with your hands)				
Do work that is interesting to you				
Do work that matters to you				
Feel challenged to do your best work				
Feel curious and wanting to learn things				
Feel encouraged by the artist				
Feel encouraged by your classmates				
Feel encouraged by your teacher				
Feel like you're doing important work				
Feel like you're learning new things				
Find it easier to learn your school work because of the art you did				
Get help from the teacher				
Have choices in your work				
Have class discussions				
Have fun				
Make something to show what you've learned (i.e. show your learning in a way that isn't a test)				
See connections between different subjects				
See how things you learned could help you in other subjects				
Solve problems to make your work better				
Work in the way you learn best				
Work with other students outside of class				
Work with students you don't normally work with				

5. How strongly do you agree or disagree with the following:

	Strongly agree	Agree	Disagree	Strongly disagree
I am proud of the work that I did in ArtsSmarts.				
I could do even the hardest work on this project if I tried.				
I learned a lot from my teacher.				
I learned a lot from the artist.				
I like going to school because I enjoy learning.				
I like going to school because my friends are there.				
I like going to school because of the activities I participate in.				
I've learned how to do some things that I will be able to use in other subjects.				
I worked harder on this project than I have on other projects.				
I would like to do an ArtsSmarts activity again.				
My teacher helped me to do challenging work.				
My teacher made me think rather than just doing easy work.				
The artist helped me to do challenging work.				

6. If you feel you have learned how to do some things that you will be able to use in other subjects, can you please give examples?

7. Did you share your ArtsSmarts work, publicly or privately?

	Yes	No	Not yet, but it is planned
I shared my ArtsSmarts work with others publicly (e.g., theatrical presentation, art show etc.).			
I shared my ArtsSmarts work with a few people of my own choosing.			

8. The best thing about having an artist in the classroom was:

9. The best comment I got about my ArtsSmarts work was:

10. My best comment was from:

- o parent
- o artist
- o teacher
- o myself
- o other students in class
- o other students in school
- o our teacher(s)
- o principal

11. The most important thing I learned from my ArtsSmarts work was:

12. I learned this from

- o parent
- o artist
- o teacher
- o myself
- o other students in class
- o other students in school
- o our teacher(s)
- o principal