

1 Items used for the inquiry-based teaching (IBT) index

Table 1: Items used in the development of the inquiry-based teaching (IBT) index

ST098 When learning <school science> topics at school, how often do the following activities occur?	
ST098Q01TA	Students are given opportunities to explain their ideas.
ST098Q02TA	Students spend time in the laboratory doing practical experiments.
ST098Q03NA	Students are required to argue about science questions.
ST098Q05TA	Students are asked to draw conclusions from an experiment they have conducted.
ST098Q06TA	the teacher explains how a <school science> idea can be applied to a number of different phenomena (e.g. the movement of objects, substances with similar properties).
ST098Q07TA	Students are allowed to design their own experiments.
ST098Q08NA	There is a class debate about investigations.
ST098Q09TA	The teacher clearly explains the relevance of <broad science> concepts to our lives.
ST098Q10NA	Students are asked to do an investigation to test ideas.
1= In all lessons; 2= In most lessons; 3= In some lessons; 4= Never or hardly ever	

2 Items used in the critical thinking index

Table 2: Critical thinking items

ST129 How easy do you think it would be for you to perform the following tasks on your own?	
ST129Q01TA	Recognise the science question that underlies a newspaper report on a health issue.
ST129Q02TA	Explain why earthquakes occur more frequently in some areas than in others.
ST129Q03TA	Describe the role of antibiotics in the treatment of disease.
ST129Q04TA	Identify the science question associated with the disposal of garbage.
ST129Q05TA	Predict how changes to an environment will affect the survival of certain species.
ST129Q06TA	Interpret the scientific information provided on the labeling of food items.
ST129Q07TA	Discuss how new evidence can lead you to change your understanding about the possibility of life on Mars.
ST129Q08TA	Identify the better of two explanations for the formation of acid rain.
1=I could do this easily; 2=I could do this with a bit of effort; 3=I would struggle to do this on my own; 4= I couldn't do this	
ST131 How much do you disagree or agree with the statements below?	
ST131Q01NA	A good way to know if something is true is to do an experiment.
ST131Q03NA	Ideas in <broad science> sometimes change.
ST131Q04NA	Good answers are based on evidence from many different experiments.
ST131Q06NA	It is good to try experiments more than once to make sure of your findings.
ST131Q08NA	Sometimes <broad science> scientists change their minds about what is true in science.
ST131Q11NA	The ideas in <broad science> science books sometimes change.
1=Strongly disagree; 2=Disagree; 3= Agree; 4= Strongly agree	

3 Items of the school climate index

Table 3: School climate items

SC061 In your school, to what extent is the learning of students hindered by the following phenomena?	
ST061Q01TA	Student truancy.
ST061Q02TA	Students skipping classes.
ST061Q03TA	Students lacking respect for teachers.
ST061Q04TA	Student use of alcohol or illegal drugs.
ST061Q05TA	Students intimidating or bullying other students.
ST061Q06TA	Teachers not meeting individual students' needs.
ST061Q07TA	Teacher absenteeism.
ST061Q08TA	Staff resisting change
ST061Q09TA	Teachers being too strict with students.
ST061Q10TA	Teachers not being well prepared for classes.
1=Not at all; 2=very little; 3= To some extent; 4= A lot	
ST097 How often do these things happen in your <school science> lessons?	
ST097Q01TA	Students don't listen to what the teacher says.
ST097Q02TA	There is noise and disorder.
ST097Q03TA	The teacher has to wait a long time for students to quiet down.
ST097Q04TA	Students cannot work well.
ST097Q05TA	Students don't start working for a long time after the lesson begins.
1=Every lesson; 2= Most lessons; 3= Some lessons; 4= Never or hardly ever	
ST100 How often do these things happen in your <school science> lessons?	
ST100Q01TA	The teacher shows an interest in every student's learning.
ST100Q02TA	The teacher gives extra help when students need it.
ST100Q03TA	The teacher helps students with their learning.
ST100Q04TA	The teacher continues teaching until the students understand.
ST100Q05TA	The teacher gives students an opportunity to express opinions.
1=Every lesson; 2= Most lessons; 3= Some lessons; 4= Never or hardly ever	
ST062 In the last two full weeks of school, how often did the following things occur?	
ST062Q01TA	I <skipped> a whole school day.
ST062Q02TA	I <skipped> some classes.
ST062Q03TA	I arrived late for school.
1=Never; 2= One or two times; 3= Three or four times; 4= Five or more times	

4 Reliability analysis of the indices

Table 4: Reliability analysis of the IBT index

Item	Mean if item is eliminated	Variance if item is eliminated	Cor. Total items	Cor. multiple2	α if item is eliminated
ST098Q01TA	21.87	25.509	.470	.244	.829
ST098Q02TA	20.51	26.320	.467	.298	.829
ST098Q03TA	20.86	24.391	.607	.400	.814
ST098Q05TA	21.08	24.384	.597	.400	.815
ST098Q06TA	21.60	24.950	.528	.317	.823
ST098Q07TA	20.63	24.920	.538	.336	.822
ST098Q08TA	20.94	23.950	.611	.405	.813
ST098Q09TA	21.70	24.903	.525	.348	.823
ST098Q10TA	21.32	24.285	.577	.367	.817

N=10165; $\alpha = .837$; α standardized elements = .837

Table 5: Reliability analysis of critical thinking

Item	Mean if item is eliminated	Variance if item is eliminated	Cor. Total items	Cor. Multiple2	α if item is eliminated
ST129Q01TA	28.8263	34.106	.444	.353	.801
ST129Q02TA	28.8078	33.615	.515	.406	.796
ST129Q03TA	28.6302	33.163	.528	.446	.794
ST129Q04TA	28.7784	33.284	.528	.453	.794
ST129Q05TA	28.8220	32.950	.555	.465	.792
ST129Q06TA	28.6762	33.076	.551	.469	.792
ST129Q07TA	28.5301	33.189	.500	.454	.797
ST129Q08TA	28.5958	32.985	.535	.471	.794
ST131Q01NA_Rev	29.0199	35.837	.311	.490	.811
ST131Q03NA_Rev	28.9224	36.346	.304	.456	.810
ST131Q06NA_Rev	29.1188	35.929	.329	.515	.809
ST131Q08NA_Rev	28.9042	36.174	.312	.439	.810
ST131Q11NA_Rev	28.8687	36.101	.304	.411	.811

N=9703; α = .813; α standardized elements = .809

Table 6: Reliability analysis of school climate

Item	Mean if item is eliminated	Variance if item is eliminated	Cor. Total items	α if item is eliminated
SC061Q01TA	40.1499	62.710	.367	.805
SC061Q02TA	40.5967	61.325	.502	.798
SC061Q03TA	40.6288	61.709	.497	.799
SC061Q04TA	40.7760	61.188	.512	.798
SC061Q05TA	40.7166	61.976	.505	.799
SC061Q06TA	40.6084	61.483	.488	.799
SC061Q07TA	40.7456	61.467	.468	.800
SC061Q08TA	40.3731	60.088	.510	.797
SC061Q09TA	40.6021	64.439	.335	.807
SC061Q10TA	41.0041	63.476	.379	.805
ST062Q02TA	41.0880	67.051	.085	.817
ST062Q03TA	41.0858	66.524	.116	.816
ST097Q01TA_Rev	40.4358	63.423	.332	.807
ST097Q02TA_Rev	40.3509	63.216	.343	.806
ST097Q03TA_Rev	40.5780	62.953	.326	.808
ST097Q04TA_Rev	40.8096	63.277	.337	.807
ST097Q05TA_Rev	40.5889	63.939	.268	.810
ST100Q01TA	41.0369	63.744	.317	.808
ST100Q02TA	40.7421	63.284	.295	.809
ST100Q03TA	40.9813	62.916	.385	.804
ST100Q04TA	40.8247	62.753	.339	.807
ST100Q05TA	40.8469	63.205	.318	.808

N=8499; α =.813; α standardized elements = .812