
DESIGN AND VALIDATION OF INSTRUMENTS TO ASSESS COLLABORATION SKILLS IN ELEMENTARY SCHOOLS STUDENTS

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Abstract

This article is part of a research about design and using a learning method to improve collaboration skill in elementary school students. The aim of this article is to describe the validation of instrument in assessing collaboration skills with elementary students. The instrument was applied to 30 fifth-grader students from SDN Pancasila Lembang Bandung and SDN 35 Parak Karakah Padang. The instrument is divided into three parts which assess collaboration skill in knowledge, values/attitude, and skill aspect. The assessment of the knowledge aspect consists of 16 items of questions done by the test technique. Assessment of collaboration skill of attitude aspect was conducted by non test technique in form of questionnaire with 15 items. It shows that there were correlations between factors of the instrument and dependency one to the others which indicates the validity of the test item. The reliability of the instrument was calculated by using Cronbach's alpha coefficient, which reached a value of .71 for knowledge aspect and .67 value aspect for in the total scale. Meanwhile, the skill aspect appraisal instrument was carried out by non-test technique that is observation by teacher to the student. The observation was conducted by teacher having survey regarding students' skills. The survey itself has already been undergone expert judgment process from several experts. The statistical and expert judgment results in validating the instrument have allowed this experience to be a starting point to implement further studies about the development of collaboration skills in elementary school students.

Keywords: instruments, validation, collaboration skills, elementary school students.

INTRODUCTION

Collaboration skills are one of the top three skills that must be possessed as a tool for learning, working, and living in the 21st century. The ability to collaborate, or is commonly known as cooperative skills, is defined as the ability to interact effectively with others, work effectively in diverse groups, manage projects, take responsibility, and direct and lead others (Trilling, 2009; Deiglmyr, 2010; Griffin, dkk, 2012; 2015).

Long before the advent of the 21st century skills' term, the ability of collaboration is actually seen in the realm of social skills as a necessary capability in social interaction. In addition, there is a theory which states that collaboration skills are the sterilization of interpersonal intelligence. Certainly, because interpersonal intelligence is a must-honed one in developing human social skills. Nonetheless, exploring further on the collaboration skill indicators developed by Griffin et al (2012), it can be seen that collaboration skills require not only interpersonal intelligence but also intrapersonal intelligence (Singleton, 1983; Armstrong, 2000; Gardner, 2003; US National Research Council, 2011; Griffin, dkk, 2015).

However, the important thing is the recognition that collaboration skills are something that is needed

in everyday life. It is because as social beings, each individual will certainly interact with the community with all the diversity of tribes, religions, races, gender, even social and economic status. Obviously, the various literature and research has resulted in a conclusion that the collaboration skill should at least be developed in the world of education in order to prepare students to succeed and able to contribute positively in the life of society with all its diversity and dynamism by utilizing the flow of globalization that causes the tendency of interdependence in life social to build networking. The importance of developing this collaborative skill is also embodied in the 2013 curriculum which makes it one of the core competencies for fifth and sixth grade elementary students (Trilling, 2009; Anadinadou, 2009; Maftuh, 2010; Larson dan Miller, 2011; Griffin dkk, 2012, Kemdikbud, 2014)

Then the concern is how to profile the students' collaboration skills nowadays? To answer this, an instrument that can be used as a reference for assessing student skills is required. However, so far it is still rarely found research related skills assessment of student collaboration, especially in Indonesia. Therefore, this article attempts to describe the results of the study on the development of collaboration skills assessment instruments especially in elementary school students.

Collaboration skill assessment in this research is aimed for the fifth graders of elementary school. In its operations, collaboration skills on elementary students are described as follows (Griffin, et al, 2012),

1. Students can interact effectively with others includes:
 - a. Students know when it is appropriate to hear and speak (the knowledge aspect)
 - b. Students are able to lead themselves to be responsible and aware of mistakes (attitude aspect)
 - c. Students listen to the talk attentively, patiently, and sincerely (skill aspect)
 - d. Students speak clearly and are aware of the goals and audiences of the conversation (skill aspect)
2. Students can work effectively in diverse teams
 - a. Students know and recognize the individual roles of a successful team (knowledge aspect).
 - b. Students know each of their own strengths and weaknesses (knowledge aspect).
 - c. Students recognizing and accepting strength and weakness in others (knowledge aspect)
 - d. Students show respect for cultural differences and are prepared to work effectively with people from a range of social and cultural backgrounds (attitude aspect).
 - e. Students respond open-mindedly to different ideas and values (attitude aspect).
 - f. Students leverage social and cultural differences to create new ideas and increase both innovation and quality of work (skill aspect).
3. Students can manage projects
 - a. Students know how to plan, set, and meet goals (knowledge aspect).
 - b. Students know how to monitor and re-plan in the light of unforeseen developments (knowledge aspect).
 - c. Students persevere to achieve goals, even when facing obstacles and getting pressures (attitude aspect).
 - d. Students prioritize, plan, and manage work to achieve the intended group result (skill aspect).
4. Students can be responsible to others.
 - a. Students act responsibly with the concern of the larger community in mind (attitude/values aspect)
5. Students can guide and lead others

- a. Students use interpersonal and problem-solving skills to influence and guide others toward a goal (skill aspect).
- b. Students leverage strengths of others to accomplish a common goal (skill aspect).
- c. Students inspire others to reach their very best via example and selflessness (skill aspect).
- d. Students demonstrate integrity and ethical behavior in using influence and power (skill aspect).

RESEARCH METHOD

The development of the elementary school collaboration skill assessment instrument is conducted in two ways, namely; 1) analysis of instrument reliability and validity test through anates and spss program, and 2) expert judgment from experts at Universitas Pendidikan Indonesia. This instrument was tested on 30 students of fifth grade SDN Pancasila Lembang, 30 students from the fifth grade of SDN 35 Parak Karakah Padang. The instrument continues to be tested for reliability and validity until it reaches the criteria worthy of use.

RESULT AND DISCUSSION

This instrument was developed into three forms of assessment, namely the assessment of aspects of knowledge, attitude aspects, and skills aspects.

Assessment of Knowledge Aspect

Assessment of knowledge aspect is done by test technique with multiple choice form. After several tests on 20 items, 16 valid items are obtained as follows,

Tabel 1. Collaboration skill knowledge aspect test
(in Bahasa Indonesia)

No	Item
1	Ibu guru sedang menjelaskan pelajaran. Rudi tidak mengerti, dan ingin bertanya. Bagaimana sikap Rudi sebaiknya? <ol style="list-style-type: none"> a. Langsung bertanya pada Ibu Guru. b. Mengangkat tangan sambil bertanya. c. Mengangkat tangan dengan diam sampai Ibu Guru mempersilakan untuk bertanya. d. Diam saja, karena Ibu Guru sedang bicara.
2	Ibu dan ayah sedang berbicara, Dandi ingin menanyakan sesuatu hal, tapi tidak terlalu penting. Apa yang harus dilakukan Dandi? <ol style="list-style-type: none"> a. Langsung bertanya pada ibu.

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- b. Berbisik pada ibu.
 c. Meminta maaf dan izin untuk bertanya.
 d. Menunggu Ayah dan Ibu selesai bicara, barulah Dandi mendekati Ibu dan bertanya.
-
- 3 Saat berbicara dengan teman, sikap yang benar ialah...
- Satu orang terus bicara dan yang lainnya hanya mendengar.
 - Berbicara dan mendengar bergantian.
 - Memotong pembicaraan teman saat ingin berbicara juga.
 - Hanya mendengarkan saja, tidak mau berbicara walaupun ingin.
-
- 4 Kesuksesan sebuah kelompok atau tim dapat dicapai karena...
- Kepandaian ketua kelompok dalam memimpin.
 - Pengorbanan salah satu anggota kelompok
 - Banyaknya anggota kelompok yang pandai.
 - Peran setiap anggota kelompok.
-
- 5 Perhatikan pernyataan berikut.
- Ketua kelompok memimpin dengan tegas.
 - Setiap anggota kelompok bekerjasama dan melakukan tugas masing-masing dengan sebaik-baiknya.
 - Memilih orang yang pandai sebagai anggota kelompok.
 - Memilih tugas kelompok yang paling ringan
- Hal yang paling penting untuk meraih kesuksesan kelompok ialah...
- 1
 - 1 dan 2
 - 2 dan 4
 - 1, 2, dan 3
-
- 6 Jika sebuah tim pemain bola menang. Siapakah yang paling berperan dalam meraih kemenangan tersebut?
- Pemain yang mencetak gol.
 - Pelatih yang mengatur strategi permainan.
 - Seluruh pemain dan pelatih.
 - Jawaban a dan b benar.
-
- 7 Perhatikan pernyataan sikap di bawah ini:
- Setiap orang termasuk saya sendiri, memiliki kekurangan dan keterbatasan
 - Saya bersyukur karena saya tidak memiliki kekurangan dan keterbatasan.
 - Setiap orang termasuk saya sendiri, memiliki kelebihan masing-masing.
-
4. Saya kasihan karena orang lain tidak memiliki kelebihan seperti saya.
 Pernyataan sikap yang benar ditunjukkan oleh angka...
- 2 dan 3
 - 3 dan 4
 - 2 dan 4
 - 1 dan 2
-
- 8 Kelas lima diminta oleh sekolah untuk menampilkan drama dan tari. Sofi sangat ingin masuk kedalam kelompok tari karena kelompok tari akan memakai pakaian tradisional yang sangat bagus. Tapi, Sofi tahu bahwa sebenarnya dia tidak bisa menari dan dia lebih pintar dalam bermain drama. Apakah yang seharusnya dilakukan Sofi?
- Memaksakan diri masuk kelompok tari
 - Diam dan pasrah saja, terserah Ibu guru dia nanti masuk dalam kelompok mana.
 - Meminta saran dari teman.
 - Memilih masuk kelompok drama karena ingin drama kelas lima sukses.
-
- 9 Rusdi, Reni, Zahra, dan Bima mendapat tugas untuk membuat tempat pensil. Pada saat akan melakukan pewarnaan, Bima merasa kesulitan, tapi ia tidak mengatakan kepada temannya-temannya. Dia tidak mau teman-temannya mengatakan bahwa dia tidak pandai mewarnai. Padahal ia tahu bahwa Rusdi sangat pandai dalam mewarnai. Apakah yang seharusnya dilakukan Bima?
- Terus berusaha mewarnai walaupun terasa sulit.
 - Mengakui bahwa Rusdi lebih pandai mewarnai daripada dia tapi tetap mewarnainya sendirian karena ingin menjadi lebih pandai daripada Rusdi.
 - Mengatakan kepada yang lainnya bahwa Rusdi tidak terlalu pandai mewarnai.
 - Mengakui bahwa Rusdi lebih pandai mewarnai dan mempersilakan Rusdi untuk memimpin dan mengajarkan semua anggota kelompok mewarnai.
-
- 10 Sikap manakah yang baik terhadap teman yang kurang pandai dan sering mendapat nilai rendah?
- Menjadikan kekurangannya sebagai bahan ejekan agar dia sadar.
 - Tidak mendekatinya agar tidak terpengaruh dan ikut menjadi malas
 - Menasihatinya agar rajin belajar
 - Tetap bermain dengannya, kemudian mengajaknya dan membantunya belajar bersama.
-

11 Kelompok Andi ditugaskan oleh gurunya mewawancari dokter di puskesmas untuk mendapatkan informasi tentang kesehatan masyarakat di lingkungan tempat tinggalnya. Agar wawancaranya ini berhasil, apa yang harus dilakukan Andi dan teman-temannya?

- Saling berbagi tugas.
- Langsung menemui dokter di Puskesmas.
- Membuat rencana pertanyaan, menyiapkan alat wawancara, menemui dokter di puskesmas.
- Bertanya pada guru, apa yang harus dilakukan.

12 Bagaimana cara yang benar dalam membuat jadwal belajar agar berhasil dalam menghadapi ujian?

- Belajar saat ada waktu luang.
- Mengatur jadwal belajar dan bermain dengan seimbang.
- Belajar jika disuruh orangtua.
- Belajar saat ada PR

13 Kelas lima diminta untuk menampilkan drama saat pentas seni dibulan depan. Apa yang harus dilakukan kelas lima?

- Bertanya pada Guru apa yang harus dilakukan
- Mematuhi dan mengikuti saja perintah Guru.
- Memusyawarahkan cerita drama yang akan ditampilkan, memilih pemain, mengatur jadwal latihan.
- Jawaban a dan b benar

14 Rudi, Ani, dan Budi mendapat tugas untuk mencari informasi tentang peristiwa Bandung Lautan Api. Awalnya mereka mencari informasi dari internet. Tapi ternyata Ibu Guru mengatakan informasi dari internet belum tentu akurat. Apa yang harus dilakukan oleh Rudi, Ani, dan Budi?

- Meyakinkan ibu guru bahwa informasi yang mereka temukan akurat
- Tenang saja, yang penting tugas mereka sudah selesai.
- Pergi ke perpustakaan dan mencari informasi yang lebih banyak dari buku.
- Bertanya pada oranglain apa yang harus dilakukan.

15 Kelas Lima ditugaskan oleh Bapak Guru untuk mengunjungi sebuah tempat, mengamati alamnya dan kemudian membuat sebuah karya tentang alam yang diamati tersebut, boleh berupa puisi, cerpen, atau lukisan. Kelompok Ali berencana untuk mengamati pantai. Saat mereka akan pergi ke pantai, berita di televisi mengabarkan

bahwa hari ini dan tiga hari ke depan, masyarakat dilarang mengunjungi pantai karena ombak sedang meninggi akibat cuaca buruk. Sementara itu, dua hari lagi tugas mereka harus dikumpulkan. Apa yang harus dilakukan oleh Kelompok Ali?

- Jujur kepada guru bahwa mereka belum membuat tugas karena mereka tidak bisa ke pantai.
- Sepakat tidak masuk sekolah.
- Meminta waktu tambahan kepada guru hingga cuaca kembali normal agar mereka bisa mengamati pantai.
- Mengubah rencana, yang semula mengunjungi pantai, akhirnya mereka memutuskan untuk mengunjungi areal persawahan dipinggir kota.

16 Jika sebuah hal yang sudah direncanakan tiba-tiba tidak berjalan dengan baik sesuai rencana, maka hal yang perlu dilakukan adalah...

- Tetap melakukan hal sesuai rencana awal.
- Melakukan perencanaan ulang.
- Menyalahkan orang lain.
- Pasrah saja bagaimanapun nanti hasilnya.

Items number 1, 2, and 3, assess collaboration skill related to effectively interacting with others (know when it is appropriate to listen and when to speak). Items number 4, 5, 6, 7, 8, 9, and 10 assess collaboration skill related to effectively working in diverse teams (know and recognize the individual roles of a successful team and know each of their own strengths and weaknesses, and recognize and accepting strength dan weakness in others. Items number 11 until 16, assess collaboration skill related to managing projects (know how to plan, set, and meet goals and to monitor and re-plan in the light of unforeseen developments).

Test of Reliability and Validity of the Collaborative Skills Assesment Instrumen in Knowledge Aspect.

The results show that this instrument has 0.71% of cronbach's alpha score. The determination of the price coefficient of reliability can be classified as follows (Arikunto, 2013).

Table 2. Criteria of Instrument Reliability Reference

Degree of Reliability	Classification
0,00 $r_{11} < 0,20$	Very low reliability
0,20 $r_{11} < 0,40$	Low reliability
0,40 $r_{11} < 0,60$	Reliability enough

Degree of Reliability	Classification
0,60 $r_{11} < 0,80$	High reliability
0,80 $r_{11} < 1,00$	The reliability is very high

Whereas for validity, an item is categorized as valid if r count is greater than r table (Sugiyono, 2011). As for the result of validity analysis per item with level of significance 0,05%, can be seen from following table.

Table 3. Items validation analysis result

Numbers of item	R of table (n=30)	R of count	conclusion
1	0,361	0,402	Valid
2	0,361	0,434	Valid
3	0,361	0,501	Valid
4	0,361	0,684	Valid
5	0,361	0,412	Valid
6	0,361	0,597	Valid
7	0,361	0,617	Valid
8	0,361	0,383	Valid
9	0,361	0,615	Valid
10	0,361	0,491	Valid
11	0,361	0,450	Valid
12	0,361	0,597	Valid
13	0,361	0,497	Valid
14	0,361	0,556	Valid
15	0,361	0,659	Valid
16	0,361	0,493	Valid

Assessment of attitude/values aspect

Assessment of attitude/values aspect was done by nontest technique with the form of assessment in the form of questionnaire. This validated measurement instrument is a self-rated questionnaire according to a Likert scale (1 means strongly disagree and 5 strongly agree). After testing and data analysing, 15 valid items from 40 items were tested.

Table 4. The results of the validity test questionnaire attitude aspect (in Bahasa Indonesia)

No	Item
1	Saya bicara bergantian dengan teman (+)
2	Saya berusaha mengganti kerugian yang ditanggung orang lain akibat perbuatan saya (+)
3	Saya bersikap sesuka hati jika tidak ada sanksi atau hukuman (-)

4	Saya senang bergaul dengan teman yang berbeda bahasa (+)
5	Saya mau bergaul dengan teman yang berbeda keyakinan (+)
6	Berteman dengan orang kaya lebih menguntungkan (-)
7	Saya tidak membedakan teman, baik kaya maupun miskin (+)
8	Saya hanya mau dinasehati dan ditegur oleh orang yang lebih tua dari saya (-)
9	Saya tidak memaksakan pendapat dan ide saya jika orang lain tidak suka (+)
10	Saya menyerah saja jika sudah berusaha tapi tetap gagal (-)
11	Saya lebih suka menyerah daripada harus bersaing dengan teman (-)
12	Saya terus berusaha menyelesaikan suatu tugas walaupun hasilnya tidak pernah memuaskan (+)
13	Saya tidak peduli dengan oranglain, yang penting kebutuhan saya terpenuhi (-)
14	Saya menahan diri untuk tidak melakukan kegiatan yang menyakiti makhluk hidup lain, walaupun kegiatan itu menyenangkan (+)
15	Saya mengutamakan kepentingan orang banyak dibanding kepentingan diri sendiri (+)

Items number 1, 2, and 3, assess collaboration skill related to effectively interacting with others (know when it is appropriate to listen and when to speak, conduct themselves in a respectable, professional manner). Items number 4, 5, 6, 7, 8, and 9 assess collaboration skill related to effectively working in diverse teams (show respect for cultural differences and be prepared to work effectively with people from a range of social and cultural backgrounds, respond open-mindedly to different ideas and values). Items number 10, 11, and 12 assess collaboration skill related to managing projects (persevere to achieve goals, even in the face of obstacles and competing pressures). Items number 13 until 15 assess collaboration skill related to being responsible to others (act responsibly with the interests of the larger community in mind).

Test of Reliability and Validity of Collaboration Skills Assessment Instrument in Attitude Aspect

The results show that this instrument has a cronbach's alpha score, 0.67%. This score exceeds the instrument reliability limit (0.60%). As for the result of validity analysis per item with level of significance 0,05%, can be seen from following table,

Table 5. Results of questionnaire validity analysis

Number of item	R of table (n=30)	R of count	Conclusion
1	0,361	0,460	valid
2	0,361	0,379	valid
3	0,361	0,383	valid
4	0,361	0,391	valid
5	0,361	0,440	valid
6	0,361	0,386	valid
7	0,361	0,444	valid
8	0,361	0,563	valid
9	0,361	0,636	valid
10	0,361	0,439	valid
11	0,361	0,388	valid
12	0,361	0,451	valid
13	0,361	0,444	valid
14	0,361	0,435	valid
15	0,361	0,388	valid

Assessment in Skill Aspect

Assessment of student collaboration skills skill aspect is done by non-test technique through surveys conducted by teachers regarding students' skills (Scarupa, 2014). This measurement instrument is a student-rated questionnaire by teacher according to a Likert scale (1 means very often and 5 means never). The items in this questionnaire are derived directly from the collaboration skill indicator (Griffin, et al, 2012) and then proceed with the expert judgment process from several lecturers at Universitas Pendidikan Indonesia.

Table 6. Student-rated questionnaire by teacher to assess collaboration skill aspect (in Bahasa Indonesia)

No	Item
1	Siswa berbicara dengan lafal yang jelas Siswa memahami tujuan dari pembicaraannya Siswa berbicara sesuai dengan karakter pendengarnya
2	Siswa mendengarkan orang lain dengan penuh perhatian Siswa mendengarkan orang lain dengan sabar Siswa mendengarkan orang lain dengan tulus sehingga mampu memahami isi pembicaraan orang lain.
3	Siswa bertanggung jawab dengan peran yang ia dapat Siswa berusaha sebaik mungkin dalam melaksanakan tugas bagiannya

- Siswa berperilaku profesional dalam melaksanakan tugas bagiannya.
- 4 Siswa mampu memanfaatkan perbedaan sosial yang ada (misalnya ekonomi) untuk dijadikan sebuah hal yang positif (misalnya membantu teman yang kekurangan)
- Siswa mampu memanfaatkan perbedaan budaya yang ada sebagai ajang untuk menambah pengetahuan
- Siswa mampu menyelesaikan masalah yang dihadapi saat menyelesaikan tugas dengan memanfaatkan keragaman yang ada pada lingkungannya.
- 5 Siswa mampu membuat prioritas dari apa yang ia kerjakan
- Siswa mampu melakukan perencanaan sebelum melakukan sesuatu
- Siswa mampu mengelola pekerjaannya dengan baik dalam mencapai tujuan kelompok
- 6 Siswa mampu memahami temannya
- Siswa memiliki sikap inisiatif untuk menyelesaikan permasalahan yang terjadi
- Siswa mampu mengarahkan temannya untuk melakukan hal yang lebih bagus tanpa menyebabkan reaksi negatif
- 7 Siswa mampu mengidentifikasi kelebihan rekan sekelompoknya
- Siswa mampu menempatkan teman-temannya sesuai kelebihan masing-masing
- Siswa mampu bekerjasama secara efektif memanfaatkan kelebihan anggota kelompok masing-masing
- 8 Siswa memiliki sikap baik yang bisa menjadi teladan
- Siswa mampu mempengaruhi temannya untuk ikut berbuat yang terbaik
- Siswa memiliki sikap yang tidak mementingkan diri sendiri
- 9 Siswa menunjukkan ketulusan dan rasa ikhlas dalam melaksanakan tugas dan tanggungjawabnya
- Siswa menggunakan bahasa dan sikap yang baik dalam menasehati temannya
- Siswa menggunakan bahasa dan sikap yang baik saat mengajak temannya berbuat kebaikan.

Items number 1, 2, and 3, assess collaboration skill related to effectively interacting with others (Speak with clarity and awareness of audience and purpose, listen with care, patience, and honesty,

conduct themselves in a respectable, professional manner). Items number 4 assess collaboration skill related to effectively working in diverse teams (leverage social and cultural differences to create new ideas and increase both innovation and quality of work). Items number 5 assess collaboration skill related to managing projects (prioritize, plan, and manage work to achieve the intended group result). Items number 6 until 9 assess collaboration skill related to guiding and leading others (use interpersonal and problem-solving skills to influence and guide others toward a goal, leverage strengths of others to accomplish a common goal, inspire others to reach their very best via example and self-essence, demonstrate integrity and ethical behavior in using influence and power)

CONCLUSION AND SUGGESTION

The scale has consistency since the Cronbach alpha coefficient reached the .71 and .67. On the other hand, correlations between factors indicate a good relationship and dependence between them, so it can be assumed that this study has generated a valid measure of collaboration skills instrument, since the results presented, as a whole, confirm the good and quite fair reason reliability, also factorial validity and content.

Researchers suggest to conduct more studies and investigations on collaboration skills in students. It is also expected that in the future there will be further development for better collaboration skill assessment instrument. It is also hoped that there will be more studies on teaching and learning design to develop collaborative skills in students.

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