International Conference on Mathematics and Sc	ience Education (ICMS	cE) 2020	IOP Publishing
Journal of Physics: Conference Series	<b>1806</b> (2021) 012174	doi:10.1088/1742-659	96/1806/1/012174

be able to find effective and efficient learning strategies. At the adapting stage, students were asked to understand the learning objectives, academic abilities, and learning styles. In the searching stage, students were guided to gather the key informations both of by individually and by groups. In the interpreting stage, students were guided to work together in small groups. One group consists of four students. Their task were to complete the jumping by answering higher order thinking questions. In the next stage, students were guided to prepare reports and mind maps. So, the ASICC learning model guides students to be able to reflect on themselves to achieve learning goals, gather key information, solve contextual problems, share their idea, and produce specific products.

Based on the description of the ASICC learning model, student learning activities were directed not only to be able to think at a higher order thinking through problem solving. However, students are also directed to be able to solve problems in groups. This revealed that the ASICC learning model guides students to learn in a group in a structured and organized manner. Collaboration skills is one of the life skills needed in the 21st century [4,5,7]. Collaboration skills are closely related to motivational processes, task sharing, understanding of group vision, targets, and self-evaluation [3,8]. This shows that collaboration skills required time in process and stages [4,6]. These skills cannot emerge suddenly, must be programmed, structured, and organized [10]. Learning that aims to improve student collaboration skills must also be designed in a structured and organized manner. So that students' collaboration skills can be improved.

**Table 1.** Score pre and posttest of the student critical thinking and collaboration skills.

Class -	Score Critical Thinking		N Cain	Score Colaboration		<i>N</i> -
	Pre	Post	- N-Gain	Pre	Post	Gain
Control	$75.21 \pm 2.05*$	$76.82 \pm 0.96 *$	Low	$26.44 \pm 2.23^{**}$	$32.17 \pm 0.14*$	High
ASICC	$76.84 \pm 1.67*$	$77.09 \pm 1.88*$	Low	$25.06 \pm 1.47^{**}$	$48.96 \pm 0.23*$	High
*) 1	(aaam, **) law ag	4				

\*) good category, \*\*) low category

**Table 2**. Results of t-Test and correlation between critical thinking with collaboration skills(r = Pearson Correlation)

Class N	NI –	Mean		
	IN -	Critical Thinking	Collaboration	r (0.01)
Control	36	$76.82\pm0.96$	$32.17\pm0.14$	0.78
ASICC	36	$77.09 \pm 1.88$	$48.96 \pm 0.23$	0.80
Sig. (0.05)	-	0.22	0.00	

## 4. Conclusion

The ASICC learning model can be used not only to maintenent of students scritical thinking and also to improve the collaboration skills to the student with high academic ability. There was a strong and positive correlation between critical thinking skills and student collaboration skills.

## 5. References

- [1] Zubaidah S, Fuad N M, Mahanal S, and Suarsini E 2017 *Journal of Turkish Science Education* (*TUSED*)**144** 71-91.
- [2] Yusnaeni, Corebima A D, Susilo H, and Zubaidah S 2017 *International Journal of Instruction* **10** 2 245-262.
- [3] Hariyadi S, Corebima AD, Zubaidah S and Ibrohim 2018 Journal of Turkish Science Education 15 1 80-88
- [4] Greenstein L 2012 Assessing 21st Century Skills. (London : Corwn A Sage Company)
- [5] Kudari JM 2016 International journal of Emerging Research in Management & Technology 5 6 30-36.

- [6] Avsec S and Kocijancic S 2014 International Journal of Engineering Education 30 6 1436-1449.
- Chase A, Pakhira D, and Stains M 2013 Journal of Chemical Education 90 4 409-416. [7]
- [8] Fuad N M, Zubaidah S, Mahanal S, and Suarsini E 2017 International Journal of Instruction 10 1 101–116.
- [9] Heidari M and Shahbazi S 2016 International Journal of Critical Illness and Injury Science 6 4 182–187.
- [10] Santoso AM and Primandiri PR 2019 Pengembangan Model Pembelajaran ASICC untuk Mendukung Kecakapan Abad 21 Siswa SMA. Laporan Penelitian Hibah Kompetitif Nasional. Tidak Dipublikasikan. Universitas Nusantara PGRI Kediri.
- [11] Zubaidah S, Corebima AD, and Mistianah 2015 Asesmen Berpikir Kritis Terintegrasi Tes Essay. Prosiding Simposium on Biology Education (Symbion), Jurusan Biologi FKIP Universitas Ahmad Dahlan Yogyakarta 4-5 April 2015.

## Acknowledgments

The authors would like to thank the Ministry of Education and Culture Republic of Indonesia for providing this research through the 2019 National Competitive Grant.